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VOLUME II

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STOL AIRCRAFT STRUCTURAL VIBRATION PREDICTION METHOD

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VOLUME II
ACOUSTIC PREDICTION DETAILS AND ADDITIONAL PLOTS FOR SMALL STOL AIRCRAFT

Boeing Aerospace Company
Boeing Military Airplane Development
P.O. Box 3999, Seattle, Wa. 98124

AUGUST 1979

FINAL REPORT FOR PERIOD AUGUST 1977 - AUGUST 1979

AIR FORCE FLIGHT DYNAMICS LABORATORY (AFFDL/FBG)
AIR FORCE SYSTEM COMMAND
WRIGHT PATTERSON AFB, OHIO 45433

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This technical report has been reviewed and is approved for publication.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Structural response predictions have been made for two important areas of STOL-type aircraft. The method was developed to significantly improve environmental prediction methods that have been used in the past. A mathematically rigorous spectral analysis approach was developed that simulated the structure with a finite element model and used correlated and calculated acoustic input data for the forcing function.

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The structural vibration predictions were successful in predicting operating levels and describing the spectral frequency content of chosen locations on the structure. Comparisons of predicted and measured data show that the method developed and described here, may be used for a more precise way in which to predict complex structural response to jet engine excitation.

The development of a method for prediction of the external acoustic environment of USB flap-type STOL aircraft was also accomplished in a concise manner. The method is described in detail with comparisons of actual measurements to prediction. The method is seen to give good results and represents a significant improvement in acoustic prediction methods for STOL aircraft.

FOREWORD

This report was prepared by the Boeing Aerospace Company, Military Airplane Development Division, Seattle, Washington, for the Air Force Flight Dynamics Laboratory, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio, under Contract F33615-77-C-3035. This research was conducted under Project 2401 and Task 240104, "Vibration Prediction and Control, Measurement and Analysis." Mr. Jerome Pearson (AFFDL/FBG) was project engineer.

This report entitled, "STOL Aircraft Structural Vibration Prediction Method," has been divided into two volumes, Volume I is entitled, "Prediction Procedure and Aircraft Parameteric Studies", and Volume II is entitled, "Acoustic Prediction Details and Additional Plots For Small STOL Aircraft."

The performance period for this project was August 1977 through August 1979.

Overall cognizance of the project including technical method development and application was carried out by the Structural Dynamics Group of the Boeing Military Airplane Division. Key personnel associated with this program were as follows:

B. F. Dotson	Program Manager
C. S. Doherty	Technical Leader
L. M. Butzel	Acoustics Staff
C. D. Larkins	Structural Dynamics Staff
S. J. Nanevicz	Structural Dynamics Staff

Acknowledgements are given to Mr. Leo Butzel as co-author of the report who largely was responsible for development of the ribbon external acoustic prediction method. Mr. C. D. Larkins helped in the early stages of the report with timely suggestions for interpolating and extrapolating the pressure data to each panel of the finite element structural math model. Mr. Stan Nanevicz did the lion's share of the finite element modeling analyses and performed the response calculations using the Random Harmonic Analysis Program, TEV156. Valuable aid and comments were received from both Mr. Hussein Nijim and Mr. Gautam Sen Gupta on methods to simulate fuselage structure for acoustic response predictions. Thanks are also due Diane Ellis for the considerable work of typing, and to Kristi Pepper for the graphics layout and assembly of the final document.

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VOLUME II

ACOUSTIC PREDICTION DETAILS
(APPENDIX A)

ADDITIONAL PLOTS FOR SMALL STOL AIRCRAFT
(APPENDIX B)

APPENDIX A
ACOUSTIC FIELD PREDICTION PROCEDURE

APPENDIX A TABLE OF CONTENTS

APPENDIX A TABLE OF CONTENTS (Continued)

SECTION I
ARRANGEMENT OF PROCEDURE

The procedure has been broken up into sections as:

Section	Subject Addressed
3.1	Characterization of the Flow Ribbon
3.2	Geometry Computations
3.3	Jet Mixing Noise
3.4	Near-Nozzle Noise
3.5	Trailing-Edge Noise
3.6	Separation Noise
3.7	Turbulent Boundary Layer Noise
3.8	Exhaust Shock Noise
3.9	Estimation for Indirect Field Points

Section 3.1 addresses computation of parameters fixing the engine exhaust flow field idealization, (i.e., the flow ribbon) employed for purposes of noise estimation.

Section 3.2 addresses computation of the coordinates of a field point (at which a noise estimate is desired) with respect to the flow ribbon determined in section 3.1.

Sections 3.3 through 3.8 then deal with computation of the spectra of the various noise components making up the overall noise estimate.

Section 3.9 discusses noise estimation of field points that are not really in direct view of most of the jet exhaust flow field, as points in the shadow zone of the wing, or on the underside of the wing, or well forward of the engine nozzle.

SECTION II

LIST OF INPUTS AND OUTPUTS FOR SECTIONS 3.1 THROUGH 3.9

In this section, inputs to and outputs of the various parts (per section division indicated in sec. I) are listed. Note that inputs are divided into fixed geometry and operational inputs. Fixed geometry inputs include those that described non-changeable geometric features of an airplane, such as the position of the engine nozzle in relationship to the fuselage. The coordinates of a field point at which an estimate is required are treated as a fixed geometry input. Operational inputs characterize the operating configuration of the airplane. These include airplane speed, altitude, engine power setting, USB flap angle, nozzle door status, VG status, etc.

English units listed for inputs will ensure consistent English units for the outputs, with output 1/3 octave band sound pressure level units of dB re 200 picobars.

Note that outputs of one section of the estimation procedure often become inputs to another section.

For section 3.1 - Characterization of the Flow Ribbon (fig. 1)

a. Fixed geometry inputs (fig. 2)

θ^{u}_{KD}, θ^{D}_{KU}, θ^{o}_{KI}, θ^{I}_{KO} = nozzle top, bottom, and side angles, deg

θ_{TB}, θ_{SK} = nozzle tip-back and skew angles, deg

θ_w = wing (fixed) trailing-edge angle, deg

A, A_{EFF} = geometric and effective nozzle exit area ft^2

A_{DOOR} = side facing open area of nozzle, when side door is open, ft^2 (fig. 1)

w = nozzle width ft (fig. 2)

L_w = distance from nozzle exit plane to start of highly curved portion of flap system, typically at fixed wing trailing edge, ft

b. Operational inputs

V_A = airplane forward velocity, ft/s

V_j = engine mixed exhaust jet velocity, ft/s

θ_{FT} = static flow turning capability of propulsion/flap system when trailing edge of flap system is at θ_F degrees, deg (fig. 1). Note: The relationship between θ_{FT} and θ_F for the YC-14 is given in figure 7.2-7 of Reference 5.

c. Outputs (fig. 1)

w^*, W^*_{DOOR} = flow ribbon widths with nozzle side door closed and open, ft

θ^*, θ' = flow ribbon skew and trail-off angles, deg

For section 3.2 - Geometry Computations

a. Fixed geometry inputs (figs. 3 and 4)

(X_o, Y_o, Z_o) = coordinates of point P_o at middle of nozzle exit plane, ft

(X_1, Y_1, Z_1) = coordinates of point P_1, ft

Note that $X_1 = X_o + L_w \tan \theta^*$

$Y_1 = Y_o + L_w$

L_w = section 3.1 input

ℓ_T = length of flat terminating section of flap if any, ft

(X_p, Y_p, Z_p) = coordinates of field point P at which noise required, ft

b. Operational inputs

W^*, W^*_{DOOR} } = section 3.1 outputs

θ^*, θ' }

θ_F = angle of trailing edge flap, deg, fig. 1)

c. Outputs

S, δ = coordinates of field point, P, re flow ribbon, ft (fig. 3)

S_{TE}, δ_{TE} = coordinates of flap trailing edge re flow ribbon, ft (fig. 3)

For section 3.3 - Jet Mixing Noise

a. Fixed geometry inputs

A_{EFF} } = section 3.1 inputs

L_w }

A_{VG} = blockage area of single vortex generator plate, ft^2

N_{VG} = number of vortex generator plates per engine

b. Operational inputs

V_A, V_j, θ_{FT} } = section 3.1 inputs

S, δ, S_{TE} } = section 3.2 outputs

ρ_j = engine mixed exhaust jet density, $lb\text{-}s^2/ft^4$

c. Outputs

1/3 octave band spectrum of jet mixing noise with and without vortex generators deployed, and which is fixed by:

- o General spectrum shape without vortex generators deployed (fig 11)
- o Frequency, f_{R1}, of peak spectrum level, Hz
- o Peak level, SPL_{R1}, of spectrum, dB re 200 picobars
- o Spectrum addition shape due to VG's being deployed (fig. 12)
- o Reference frequency, f'_{PEAK}, of spectrum addition, hz
- o Addition level, Δ SPL, dB re 200 picobars

For section 3.4 - Near-Nozzle Noise

a. Fixed geometry inputs

D_H = section 3.3 intermediate output, ft

b. Operational inputs

V_j = section 3.1 input

S, δ = section 3.2 outputs

ρ_j = section 3.3 inputs

c. Outputs

1/3 octave band spectrum of near nozzle noise, and which is fixed by:

- o General spectrum shape per jet mixing noise (fig. 11)
- o Frequency, $f_{R1} = (f_{R1})_{NN}$ of peak spectrum level, Hz
- o Peak level $SPL_{R1} = (SPL_{R1})_{NN}$, of spectrum, dB re 200 picobars.

For section 3.5 - Trailing-edge Noise

a. Fixed geometry inputs

(X_p, Y_p, Z_p) = section 3.2 input

b. Operational inputs

V_A, V_j = section 3.1 inputs

W^*, θ' = section 3.1 outputs

(X_{TE}, Y_{TE}, Z_{TE}) = section 3.2 intermediate output

S_{TE}, δ_{TE} = section 3.2 outputs

c = at-altitude local air sound speed, ft/s

c. Outputs

1/3 octave band spectrum for trailing-edge noise, and which is fixed by:

- o General spectrum shape for trailing edge noise (fig. 15)
- o Frequency, f_{R1}, of peak spectrum level, Hz
- o Peak level, SPL_{TP}, of spectrum, dB re 200 picobars

For section 3.6 - Separation Noise

a. Fixed geometry inputs

D_H = section 3.3 intermediate output

b. Operational inputs

V_j = section 3.1 input

W^* = section 3.1 output

δ_{TE} = section 3.2 output

ρ_j = section 3.3 input

r = section 3.5 intermediate output

c. Outputs

1/3 octave band spectrum of separation noise, and which is fixed by:

- o General spectrum shape for separation noise (fig. 16)
- o Frequency, f_{SP}, of peak spectrum level, Hz
- o Peak level, SPL_{SP} of spectrum, dB re 200 picobars

For section 3.7 - Turbulent Boundary Layer Noise

a. Fixed geometry inputs

$\bar{X}$ = surface flow length, ft

b. Operational inputs

$\bar{V}$ = representative flow velocity, ft/s

$\bar{\rho}$ = representative flow density, $lb\text{-}s^2/ft^4$

ALT = airplane altitude, ft

c. Outputs

1/3 octave band spectrum of turbulent boundary layer noise, and which is fixed by:

- o General spectrum shape for turbulent boundary layer noise (fig. 18)
- o Frequency, f_{BP}, of peak spectrum level, Hz
- o Peak level, SPL_{BP}, of spectrum, dB re 200 picobars

For section 3.8 - Exhaust Shock Noise

a. Fixed geometry inputs

A_{EFF} = section 3.1 input

b. Operational inputs

$V_{A'}$ = section 3.1 input

V_j^i = ideally expanded engine mixed exhaust jet velocity, ft/s

C_j = mixed exhaust jet sound speed, ft/s

ρ_j = section 3.1 input

S, δ = section 3.2 inputs

c. Outputs

1/3 octave band spectrum of exhaust shock noise, and which is fixed by:

- o General spectrum shape (fig. 19)
- o Frequency, f_s, of peak spectrum level, Hz
- o Peak level, SPL_S, of spectrum, dB re 200 picobars

SECTION III
ESTIMATION PROCEDURE

3.1 Characterization of the Flow Ribbons

3.1.1 General

For purposes of noise estimation, the engine exhaust field is characterized as a flow ribbon, of Vol I. The ribbon is described in terms of (see fig. 1) (a) its maximum width w* (or W^*_{DOOR} in the case of a nozzle with an open side door), (b) the skew angle, θ^*, of the initial spreading portion of the ribbon, and (c) the trail-off angle, θ', of the ribbon.

Conceptually, the flow ribbon is viewed as emanating from the nozzle, attached to the wing surface. It spreads laterally as it flows toward the start of the highly curved portion of the flap system at $S = L_w$, reaching its maximum width at $S = L_w$. Thereafter, its width is taken to remain constant, and its direction of flow (as viewed from above) parallel to the engine centerline axis. It initially remains attached to the strongly curved portion of the flap, turning to an angle, θ', at which point it separates from the flap and continues on a straight course at the elevation angle, θ'.

Note that the above characterization is more akin to the flow of turbulence than the thrust flow. Hence the trail-off angle, θ, is not necessarily similar to the flow turning angle, θ_{FT}, of the system. Based on the (Tulalip) data source for θ' and θ_{FT}, θ' is typically much less than θ_{FT}.

Finally, due to the usual case of unequal nozzle side lip angles, θ^0_{KI} and θ^I_{KO} (see Fig. 2), and/or a nozzle exit plane skewed at an angle, θ_{SK}, the centerline of the initial part of the flow ribbon need not be parallel to the centerline axis of the engine. The nonparallelism is reflected in a nonzero flow ribbon skew angle, θ^*, per figure 1.

3.1.2 Determination of Characterizing Parameters

a. Calculate effective nozzle kickdown angle, as:

$$\theta_{KD} = \begin{cases} \theta'_{KD}; & \theta'_{KD} \geq 0 \\ 0 & ; \theta'_{KD} < 0 \end{cases}$$

where

$$\theta'_{KD} = \frac{1}{2}\left[\theta^{U}_{KD} - \theta^{D}_{KU}\right] - \left[\theta^{U}_{KO} + \theta^{0}_{KI}\right]\frac{h'}{W} - \frac{1}{4}\theta_{w}$$

and $h' = A_{EFF}/W$

θ^{U}_{KD} = kick-down angle

θ^{D}_{KU} = kick-up angle

θ^{I}_{K} = inner side-lip angle

θ^{0}_{KI} = outer side-lip angle

θ_{w} = wing elevation angle

b. Determine the equivalent wing length, L'_W (accounts for effect of forward velocity), as

$$L'_w = \frac{L_w}{1+V_A/V_J}$$

where

V'_A = airplane forward velocity

V_j = engine mixed exhaust jet velocity

c. Enter figure 5 with θ_{KD} to find the normalized uncorrected flow ribbon width, $(W'-W)/L'_W$

d. Correct $(W'-W)/L_w'$ for the effect of nozzle tip-back angle, θ_{TB} (see fig. 2), to obtain the (door closed) normalized flow ribbon width, $(W^*-W)/L_w'$, as

$$\frac{W^*-W}{L_w'} = \left[1 - 0.5 \sin^2 \theta_{TB}\right]\left\{\frac{W'-W}{L_w'}\right\}$$

and then solve for W^*

e. Locate W^* at $S = L_w$ per figure 1 and where the flow ribbon skew angle, θ^*, is given by

$$\theta^* = \tan^{-1}\left\{\tan\theta_S^*/(1 + V_A/V_j)\right\}$$

where

$$\theta_S^* = \frac{1}{4}\left(\theta_{KO}^I - \theta_{KI}^O\right) + \frac{1}{4}\theta_{SK}$$

with θ_{KO}^I, θ_{KI}^O, and θ_{SK} defined on figure 2

f. Find the static trail-off angle, θ_S', by entering figure 6 with the propulsion/flap system <u>static</u> flow turning angle, θ_{FT}.

g. Correct θ_S' for the effect of airplane forward velocity to obtain the actual flow ribbon trail-off angle, θ', as

$$\theta' = \tan^{-1}\left\{\sin\theta_S'/\left[\cos\theta_S' + 0.25\,(V_A/V_j)\right]\right\}$$

where

V_A = airplane forward velocity

V_j = engine mixed exhaust jet velocity

3.1.3 Adjustment for Open Nozzle Side Door

Referring to step (e) of section 3.1.2, and figure 1, move the outer edge of the flow ribbon outwards (but leave the inboard edge position unchanged), to achieve a flow ribbon width, W^*_{DOOR}, as

$$W^*_{DOOR} = W^* + \frac{A_{DOOR}}{h'^2}\,(W^*-W)$$

where

$$h' = A_{EFF}/W \qquad \text{(See fig. 2, view B)}$$

3.2 Geometry Computations

3.2.1 General

This section contains procedures for determining the S and δ coordinates of a field point P (per fig. 3). In general the noise at P is a smooth, relatively slowly varying function of S, but a much more rapidly varying function of δ.

3.2.2 Dimensional Frame of Reference

For the following computations, the frame of reference used is tied to the fuselage, per figure 4. Referring now to figure 3, we define the coordinates of certain points basic to computations in section 3.2.2 and 3.2.3.

(X_o, Y_o, Z_o) = coordinates of point P_o (at the nozzle exit plane)

(X_1, Y_1, Z_1) = coordinates of Point P_1 (at the start of the strongly curved portion of the USB flap system)

(X_P, Y_P, Z_P) = coordinates of field point P.

Note that (per fig. 3)

$$X_1 = X_o + L_w \tan \theta^*$$

$$Y_1 = Y_o + L_w$$

The coordinates of point P' (where the flow ribbon departs from the flap surface) are given by

$$X_p' = X_1$$

$$Y_p' = Y_1 + 2R_F \sin\left(\frac{\theta' - \theta_w}{2}\right) \cos\left(\frac{\theta' + \theta_w}{2}\right)$$

$$Z_p' = Z_1 - 2R_F \sin\left(\frac{\theta' - \theta_w}{2}\right) \cos\left(\frac{\theta' + \theta_w}{2}\right)$$

For future reference, the coordinates of the useful point, P_{TE}, on the flap trailing edge are given by

$$X_{TE} = X_1$$

$$Y_{TE} = Y_1 + 2R_F \sin\left(\frac{\theta_F - \theta_w}{2}\right) \cos\left(\frac{\theta_F + \theta_w}{2}\right) + \ell_T \cos\theta_F$$

$$Z_{TE} = Z_1 - 2R_F \sin\left(\frac{\theta_F - \theta_w}{2}\right) \sin\left(\frac{\theta_F + \theta_w}{2}\right) - \ell_T \sin\theta_F$$

3.2.3 Computation of S

Referring to figure 3, s is the distance downstream of the nozzle exit plane (as measured along the flow ribbon), of the point, P_T, on the ribbon that is closest to the field point, P, and is given by

$$S = \begin{cases} Y_p - Y_o \quad ; \quad Y_p - Y_o \le L_w \\ L_w \; ; \; L_w < Y_p - Y_o \le L_w + (Z_p - Z_o)\tan\theta' \\ L_w + (Y_p - Y_1)\cos\theta' - (Z_p - Z_o)\sin\theta' \; ; \; Y_p - Y_o > L_w + (Z_p - Z_o)\tan\theta' \end{cases}$$

3.2.4 Computation of δ

The generalized expression for δ is given by

$$\delta = \sqrt{\bar{R}.\bar{R} - \frac{(\bar{R}.\bar{r})^2}{\bar{r}.\bar{r}}}$$

with

$$\bar{R}.\bar{R} = R_x^2 + R_y^2 + R_z^2$$

$$\bar{R}.\bar{r} = R_x r_x + R_y r_y + R_z r_z$$

$$\bar{r}.\bar{r} = r_x^2 + r_y^2 + r_z^2$$

and the expressions for R_x, R_y, R_z, r_x, r_y, and r_z depend upon the regional location of the field point, P. Eight distinct regions are identified in figure 7 in each of which a unique set of expressions apply. These are given in fig. 21 and fig. 22. Note the field points in the shadow zone of the wing and/or forward of the nozzle exit plane are not considered here, but rather in section 3.9.

3.2.5 Computation of S_{TE} and δ_{TE}

Since the S and δ coordinates of the flap trailing edge are often required (S_{TE} is needed in the jet mixing noise computation, while S_{TE} and δ_{TE} are required in the separation and trailing-edge noise computations), the formulas for these are given in this section.

$$S_{TE} = \begin{cases} L_w + \frac{\pi}{180}(\theta' - \theta_w)R_F + \ell_T ; \theta_F = \theta' \\ L_w + \frac{\pi}{180}(\theta' - \theta_w)R_F + \\ \quad 2R_F \sin\left(\frac{\theta_F - \theta'}{2}\right) \cos\left(\frac{\theta_F + \theta'}{2}\right) + \ell_T \cos(\theta_F - \theta') \end{cases} ; \theta_F > \theta'$$

$$\delta_{TE} = \begin{cases} 0 \; ; \theta_F = \theta' \\ 2R_F \sin\left(\frac{\theta_F - \theta'}{2}\right) \sin\left(\frac{\theta_F + \theta'}{2}\right) + \ell_T \sin(\theta_F - \theta') ; \theta_F > \theta' \end{cases}$$

3.3 Jet Mixing Noise

3.3.1 General

This estimate is for jet mixing noise in the presence of a scrubbed wing/flap system with or without vortex generators. (The vortex generators, if present, are viewed as amplifiers of certain portions of the basic jet mixing noise spectrum. The amplification

effect is treated in sec. 3.3.4). The estimate applies to scrubbed or nonscrubbed wing, flap, and body sections.

The mixing noise is characterized as having a simple, single peaked spectrum shape whose peak frequency depends upon engine mixed exhaust velocity, V_j, airplane velocity, V_A, the downstream S coordinate, and distance, δ, of the field point from the flow ribbon (idealization of the flow field, per sec. 3.1). The peak spectrum level is taken to depend on these same parameters, and additionally on engine mixed exhaust density, ρ_j

There appears to be an additional component of the jet mixing noise, which is observed close to the nozzle exit plane. This component, referred to as near-nozzle noise, is likely due to interaction of the flow with the nozzle lip and perhaps to primary/secondary mixing. It is treated separately in section 3.4.

3.3.2 Jet Mixing Noise Estimation Procedure

a. Determine the reference peak level frequency, f_{S1}, as

$$f_{S1} = \frac{1.8V_j/D_H}{\frac{S}{D_H} + 3.0}$$

where

V_j = engine mixed exhaust jet velocity

D_H = engine hydraulic diameter $= \sqrt{\frac{4}{\pi} A_{EFF}}$

and A_{EFF} = is defined on view A of figure 2

b. Determine the reference peak level frequency, f'_{R1}, by adjusting f_{S1} as

$$f'_{R1} = \left(\frac{V_j + V_A}{V_j - V_A}\right)\left(\frac{V_j + V_A}{V_j}\right) f_{S1}$$

where

V_A = airplane velocity

c. Enter figure 8 with δ/D_H to obtain the final correction, C_{R1}, to f'_R, and then compute the frequency, f_{R1}, of the peak level of the jet mixing noise as

$$f_{R1} = C_{R1} f'_{R1}$$

d. Determine the reference static peak jet mixing noise level, SPL_{S1}, via the construction of figure 9.

e. Obtain the reference peak level, SPL'_{R1}, by adjusting SPL_{S1} to local airplane conditions as

$$SPL'_{R1} = SPL_{S1} - \Delta SPL_1$$

where

$$\Delta SPL_1 = -20 \log \left[\frac{\rho_j (V_j - V_A^2)}{\rho_o V_o^2} \right]$$

and

ρ_j = at-altitude engine mixed exhaust jet density

ρ_o = (sea level static density) = 2.38×10^{-3} lb-s^2/ft^4

V_j = engine mixed exhaust jet velocity

V_A = airplane velocity

V_o = 750 ft/s

f. Enter figure 10 with δ/D_H to obtain Δ_{R1}, the final correction to SPL'_{R1}, and then form SPL_{R1}, the peak level of the jet mixing noise spectrum as

$$SPL_{R1} = SPL'_{R1} - \Delta_{R1}$$

g. Apply f_{R1} and SPL_{R1} to obtain the dimensional jet mixing noise spectrum from the dimensionless spectrum of figure 11. This applies for the case of no vortex deployed.

3.3.3 Adjustment Due to Deployed Vortex Generators

Obtain the adjustment Δ_{VG} to the jet mixing noise spectrum (obtained in sec. 3.3.2) due to deployed vortex generators from figure 11, in which

N_{VG} = number of vortex generators per engine

A_{VG} = flow blockage area of each vortex generator plate

This adjustment is to be added to the jet noise spectrum obtained in section A.4.2.

3.4 Near-Nozzle Noise

3.4.1 General

In a number of USB installations, a noise peak is observed close to the nozzle having its corresponding frequency about five times higher than that predicted by jet mixing, per section 3.3.2. This peak may be due to direct interaction of the flow with the nozzle lip, or, perhaps, due to primary/secondary flow mixing. However, to date no simple intuitively comfortable model has been found to handle this phenomenon. In the absence of such a model, the following approach has been used: the noise source, referred to as "near nozzle noise," is taken to have a spectrum shape the same as that for jet mixing noise (without vortex generators!) specified in section 3.3. The peak frequency is taken

to be five times the static reference frequency, f_{S1}, of the jet mixing noise spectrum, as evaluated at the nozzle exit plane (i.e., at $S/D_H=0$). The peak frequency, and peak level, are taken to be independent of airplane velocity. The peak level is based upon NASA 1 x 6 slot data in which the near-nozzle noise is most clearly observable.

3.4.2 Near Nozzle Noise Estimation Procedure

a. Determine the peak frequency, $(f_{R1})_{NN}$, of the near-nozzle noise spectrum as

$$(f_{R1})_{NN} = 3.6 \frac{V_j}{D_H}$$

where

V_j = engine mixed exhaust jet velocity

D_H = engine hydraulic diameter = $\sqrt{\frac{4}{\pi} A_{EFF}}$

and A_{EFF} is defined in view A of figure 2.

b. Determine the near-nozzle noise spectrum peak level, $(SPL_{R1})_{NN}$, as

$$(SPL_{R1})_{NN} = 20 \log \left[\frac{\rho_j V_j^2}{\rho_o V_o} \right] - 20 \log \left(1 + \frac{S}{D_H} + \left(\frac{\delta}{D_H}\right)^2\right) + 146 \text{ (dB)}$$

where

ρ_j = engine mixed exhaust jet density

ρ_o = (sea level ambient density) = 2.38×10^{-3} lb-s^2/ft^4

V_o = 750 ft/s

c. Apply these values of f_{R1} and SPL_{R1} to the dimensionless spectrum of figure 11 to obtain the dimensionless near-nozzle noise spectrum.

3.5 Trailing-Edge Noise

3.5.1 General

Trailing-edge noise is viewed as due to conversion of jet mixing fluctuations past the flap trailing edge into acoustic radiation. In the near field, this noise is taken to decrease as $1/r^2$, where r is the distance to the field point, P, from the trailing edge (point directly under the center of the flow ribbon, see fig. 13), and also to depend upon the distance, δ_{TE} of this same trailing-edge point from the flow ribbon.

3.5.2 Trailing-Edge Noise Estimation Procedure

a. Determine δ_{TE} and S_{TE} (using the procedure of sec. 3.2.5) for point P_{TE}, per figure 13.

b. Determine f_{R1} and SPL_{R1} for point P_{TE} using the procedure of section 3.3.2.

c. Adjust SPL_{R1} to obtain the peak level SPL_{TP}, of the trailing-edge noise spectrum at field point, P, as

$$SPL_{TP} = SPL_{R1} + 10 \log \left[\left(\frac{V_c}{c}\right) \left(1 + \left(\frac{W^*}{r}\right)^2 \right] + 10 \log \left[\left| \cos \eta \right| \left| \sin^2 \frac{\theta}{2} \right| \right] - 14 \text{ (dB)}$$

where

$V_c = (V_j + V_A)/2$

c = local ambient air sound speed

W^* = flow ribbon width (from sec. 3.1.2)

r, η, θ = coordinates of field point, P, with respect to trailing-edge point, P_{TE}, per Figure 14.

Appropriate expressions for r, η, and θ consistent with Figure 14 are

$$r = \sqrt{(X_p - X_{TE})^2 + (Y_p - Y_{TE})^2 + (Z_p - Z_{TE})^2}$$

$$\eta = \tan^{-1} \frac{\Delta X}{\Delta Y}$$

$$\theta = \sin^{-1} \frac{\Delta Z}{r}$$

where

$$\Delta X = X_{TE} - X_p$$

$$\Delta Y = (Y_p - Y_{TE}) \cos \theta' - (Z_p - Z_{TE}) \sin \theta'$$

$$\Delta Z = (Y_p - Y_{TE}) \sin \theta' + (Z_p - Z_{TE}) \cos \theta'$$

In these expressions, θ' is the flow ribbon trail-off angle (from sec. 3.1), while (X_P, Y_P, Z_P) are the coordinates of the field point P, and (X_{TE}, Y_{TE}, Z_{TE}) are the coordinates of the trailing-edge point (see sec. 3.2).

d. Apply these values of SPL_{TP} and f_{R1} to the dimensionless trailing-edge noise spectrum of figure 15 to obtain the dimensional trailing-edge noise spectrum.

3.6 Separation Noise

3.6.1 General

Separation noise is typically observed only on the aft portion of the USB flaps, and typically only at frequencies below the peak (frequency) of the jet mixing noise spectrum, per section 3.3. Noise associated with aft flap flow separation would seem to be similar to wing separation with no reattachment point, or perhaps base flow separation. Both are discussed in volume II of AFFDL-TR-76-91, but the contents are not very satisfying. In all cases, however, a spectrum shape for separation noise not unlike that for turbulent boundary layer is suggested. Hence the approach here is to model the separation noise spectra with a TBL spectrum shape, as

$$SPL = \frac{2}{\pi}\left[\tan^{-1}\left\{2\pi \cdot 2^{\frac{1}{6}\cdot\hat{s}}\right\} \cdot \tan^{-1}\left\{2\pi \cdot 2^{\frac{-1}{6}\cdot\hat{s}}\right\} + K\right]$$

where SPL is the 1/3 octave band value at a Strouhal number, $\hat{s}$. $\hat{s}$ is taken to have the form

$$\hat{s} = \frac{2\delta_{TE} f}{V_j}$$

and

δ_{TE} = distance of flow ribbon from flap trailing edge

V_j = engine mixed exhaust jet velocity

f = frequency

and K has the form

$$K = 20 \log\left[\frac{\delta_{TE}}{D_H} \cdot \frac{\rho_j V_j^2}{\rho_o V_o^2}\right] - f(r) + K'$$

with

D_H = nozzle hydraulic diameter

ρ_t = engine mixed exhaust jet density

ρ_o = sea level static air density

V_o = 750 ft/s

and where K' is chosen to fit a particular data source, in this case YC-14 Tulalip test data, and f(r) accounts for the distance of the field point from the separation region.

3.6.2 Separation Noise Estimation Procedure

a. Determine the peak frequency, f_{SP}, of the separation noise spectrum as

$$f_{SP} = \frac{1}{4\pi} \frac{V_j}{\delta_{TE}}$$

where

V_j = engine mixed exhaust jet velocity

δ_{TE} = distance of flow ribbon (per sec. 3.2.5) from flap trailing edge

b. Determine the separation noise specturm peak level, SPL_{SP}, as

$$SPL_{SP} = 20 \log\left[\frac{\delta_{TE}}{D_H}\right] + 20 \log\left(\frac{\rho_j V_j^2}{\rho_o V_o^2}\right) - 20 \text{ Log } (1 + \frac{r}{w^*}) + 151 \text{ (dB)}$$

where

ρ_j = engine mixed exhaust jet density

ρ_o = (sea level ambient density) = 2.38×10^{-3} lb-s^2/ft^4

V_o = 750 ft/s

r = distance between field point, P, and trailing-edge point, P_{TE}, per section 3.2.5

W^* = width of flow ribbon, per section 3.1.2

c. Apply these values of f_{SP} and SPL_{SP} to the dimensionless separation noise spectrum of figure 16 to obtain the dimensional separation noise spectrum.

3.7 Turbulent Boundary Layer Noise

3.7.1 General

The spectrum of turbulent boundary layer noise displays a simple, single peaked, gently rolling off spectrum whose peak level scales reasonably well with the dynamic pressure of the flow field scrubbing the field point. The peak frequency scales reasonably with the ratio of the scrubbing flow velocity to the local boundary layer thickness, but even in the case where the flow is associated with the airplane velocity, there is some confusion as to the actual proportionality constant. The constants used in this estimation procedure are based entirely on YC-14 flight data for fuselage points/conditions for which engine noise is not important. The general spectrum shape is taken to be the same as that used for the separation noise spectrum of section 3.5. The same constants and spectrum shape are also taken to apply to field points where the characteristic scrubbing velocity is the engine mixed exhaust jet velocity.

3.7.2 Turbulent Boundary Layer Noise Estimation Procedure

a. Determine the characteristic distance, $\bar{X}$, velocity, $\bar{V}$, and density, $\bar{\rho}$, to be used:

1. For field points clearly away from the engine exhaust flow field (i.e., $\delta/D_H \geq 1$)

$\bar{X} = X_1$ = distance from airplane noise to fuselage field point, or wing leading edge to wing field point

$\bar{V} = V_A$ = airplane velocity

$\bar{\rho} = \rho$ = ambient air density

2. For field points distinctly scrubbed by the engine exhaust flow

$\bar{X} = X_2$ = sum of the distance from the nozzle exit plane to the field point and the fan duct length

$\bar{V} = V_j$ = engine mixed exhaust jet velocity

$\bar{\rho} = \rho_j =$ engine mixed exhaust jet density

3. For other field points, take $\bar{X} = (X_1 + X_2)/2$
$\bar{V} = (V_j + V_A)/2$
$\bar{\rho} = (\rho_j + \rho)/2$

b. Determine the boundary layer noise spectrum peak frequency, f_{BP}, as

$$f_{BP} = 1/2 \frac{\bar{V}}{\delta_{BL}}$$

where

$$\delta_{BL} = \text{boundary layer thickness} = \frac{0.37\bar{X}}{(R_{\bar{X}})^{1/5}}$$

with

$$R_{\bar{X}} = \text{Reynold number} = \frac{1}{\upsilon} \bar{X} \bar{V}$$

and $\frac{1}{\upsilon}$ is obtained from figure 17.

c. Determine the turbulent boundary layer noise peak spectral level, SPL_{BP}, as

$$SPL_{BP} = 20 \log \left(\frac{\bar{\rho} \bar{V}^2}{\rho_o V_o^2} \right) + 125 \text{ (dB)}$$

where

ρ_o = (sea level air density) = 2.38×10^{-3} lb-s^2/ft^4

V_o = 750 ft/s

d. Apply these values of f_{PB} and SPL_{PB} to the dimensionless spectrum of figure 18 to obtain the dimensional turbulent boundary layer noise spectrum.

3.8 Exhaust Shock Noise

3.8.1 General

When the engine mixed exhaust ideal velocity, V_j^i exceeds the local sound speed, c, of the exhaust mixture, additional engine noise is observed beyond that predicted in the previous sections. This noise is found to scale in level with a classical shock noise parameter, β', as 40 log β' (refs 6,7 - see reference list for Vol. I) where

$$\beta' = \sqrt{\left(\frac{V_j^i}{c}\right)^2 - 1}$$

The additional noise is hence referred to as shock noise. For USB STOL airplanes with high-bypass engines, as for the YC-14 such additional noise is typically observed only at high-altitude, high-speed operations, as in cruise.

3.8.2 Shock Noise Estimation Procedure

a. Determine the peak frequency, f_s, of the shock noise spectrum as

$$f_s = \left(\frac{1.8}{S/D_H + 3.0}\right)\left(\frac{V_j^i + V_A}{D_H}\right)\left(\frac{V_j^i + V_A}{V_J^i - V_A}\right)$$

where

S = downstream coordinate of field point

D_H = engine hydraulic diameter = $\sqrt{\frac{4}{\pi} A_{EFF}}$, and A_{EFF} is defined in view A of figure 2

V_j^i = ideally expanded mixed exhaust jet velocity

V_A = airplane velocity

b. Determine the peak level, SPL_S of the shock noise spectrum as

$$SPL_S = SPL_{S1} + \Delta_1 - \Delta_2 \quad \Delta(dB)$$

where

$$SPL_{S1} = 20 \log \left(\frac{\rho_j}{\rho_o}\right) + 40 \log \beta$$

$$\Delta_1 = \begin{cases} 150 & ; \delta/D_H \leq 0.37 \\ 150 - 20 \log (2.70\, \delta/D_H); & \delta/D_H > 0.37 \end{cases}$$

$$\Delta_2 = \begin{cases} 0 & ; \ S/D_H \leq 3 \\ 20 \log (S/3D_H); & S/D_H > 3 \end{cases}$$

In the equation for SPL_{S1}

$$\beta = \sqrt{\left(\frac{V_j^i}{c}\right)^2 - 1}$$

ρ_j = engine mixed exhaust jet density

ρ_o = (sea level air density) = 2.38×10^{-3} lb-s^2/ft^4

and

c = engine mixed exhaust jet sound speed.

c. Apply the values of f_S and SPL_S to the dimensionless spectrum of figure 19 to obtain the dimensional shock noise spectrum.

3.9 Estimation for Indirect Field Points

For field points that are in the shadow zone of the wing and/or forward of the nozzle exit plane (i.e., in region B) per figure 20, the following approach is suggested.

a. Determine the shortest overwing path length, ℓ_o, from the nozzle exit plane to the field point P

b. Determine the shortest underwing path length, ℓ_u, from the flow ribbon to the field point, P

c. Determine the levels at P due to jet mixing noise and near-nozzle noise with

$$S = 0$$

$$\delta = \ell_o$$

and the jet mixing noise and trailing-edge noise with

$$S = S_{TE}$$

$$\delta = \ell_u$$

d. Determine the turbulent boundary layer noise at P

e. Sum the above five noise contributions.

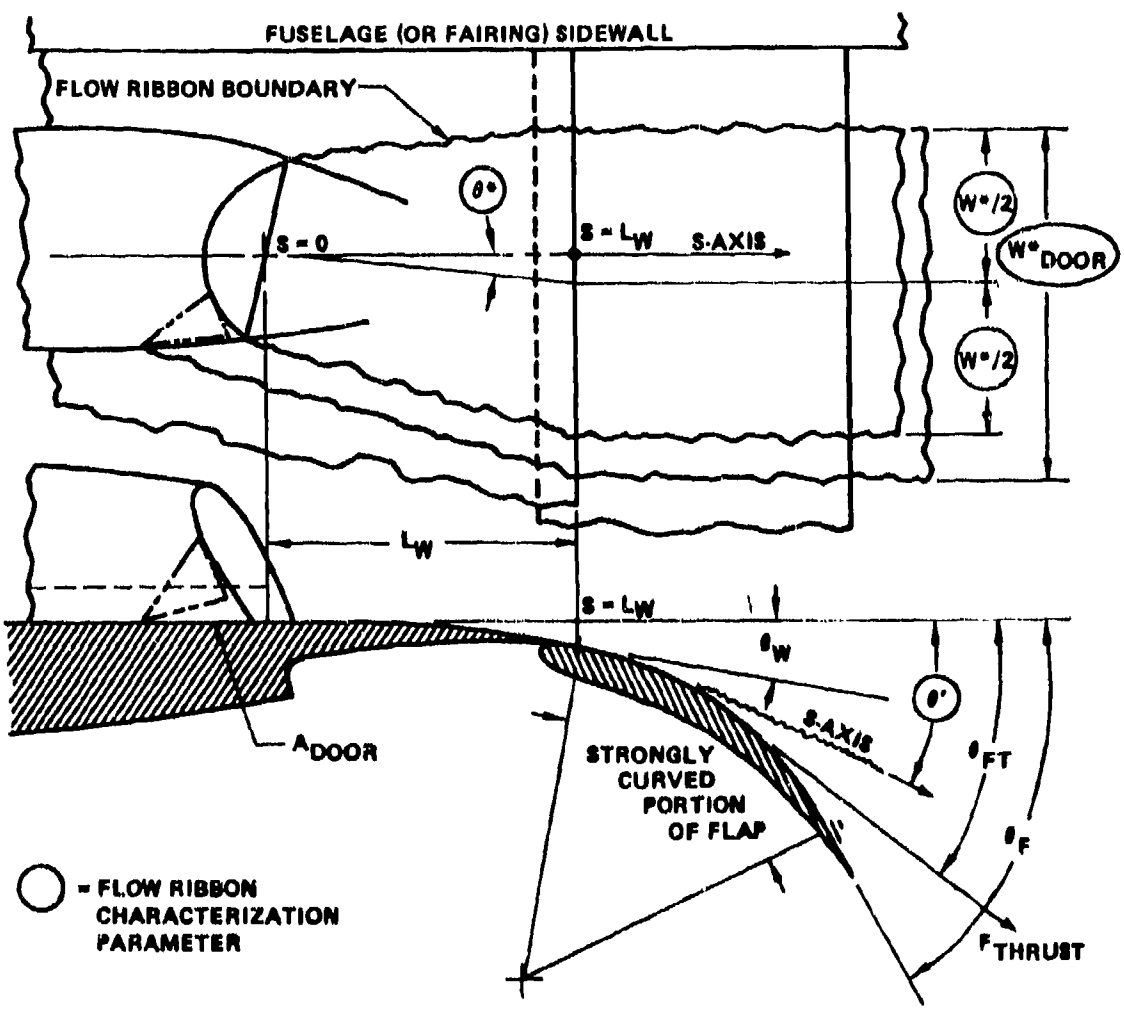


Figure 1. Flow Ribbon Characterization Parameters

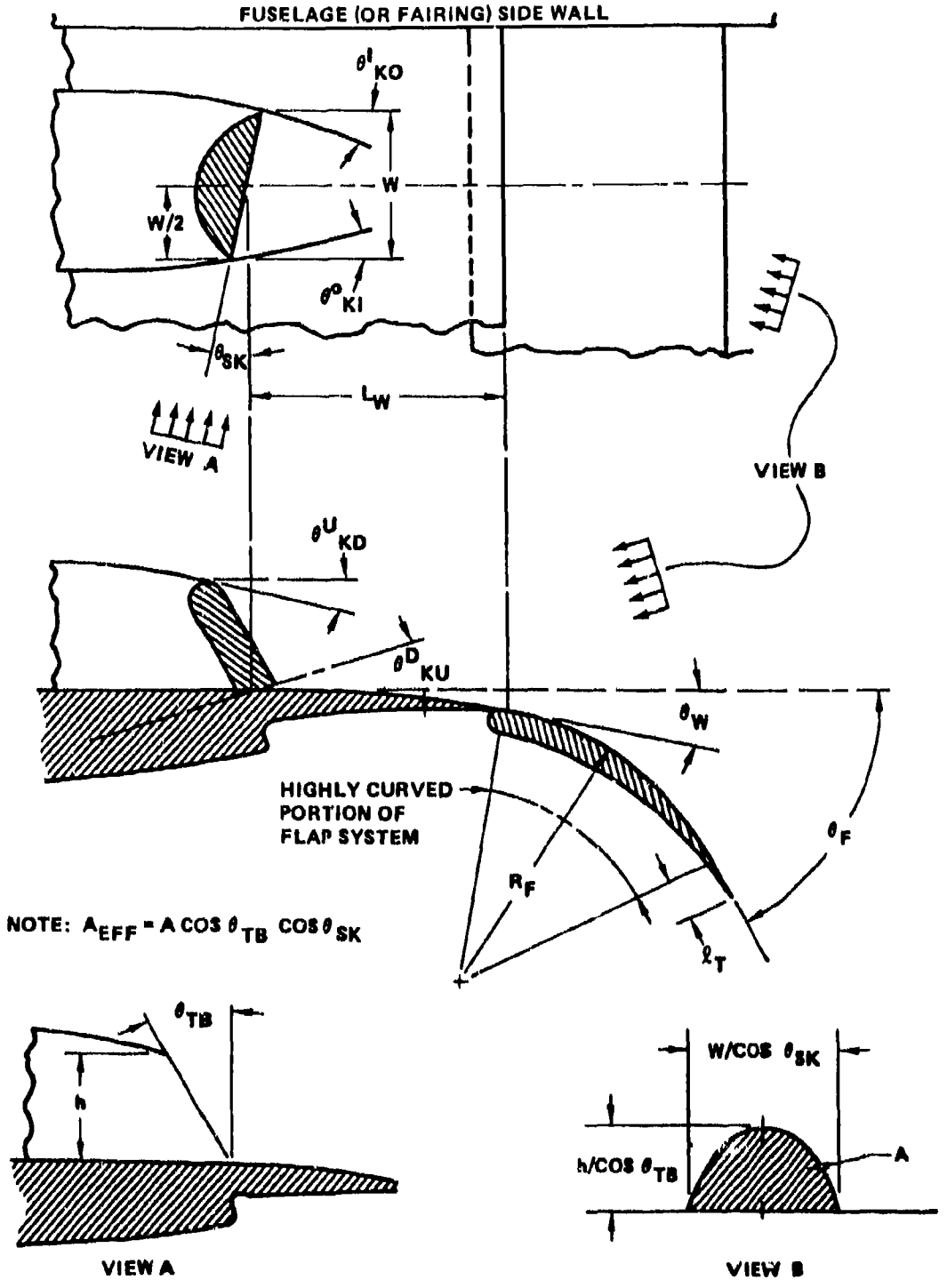


Figure 2. Wing/Flap/Nozzle Parameters

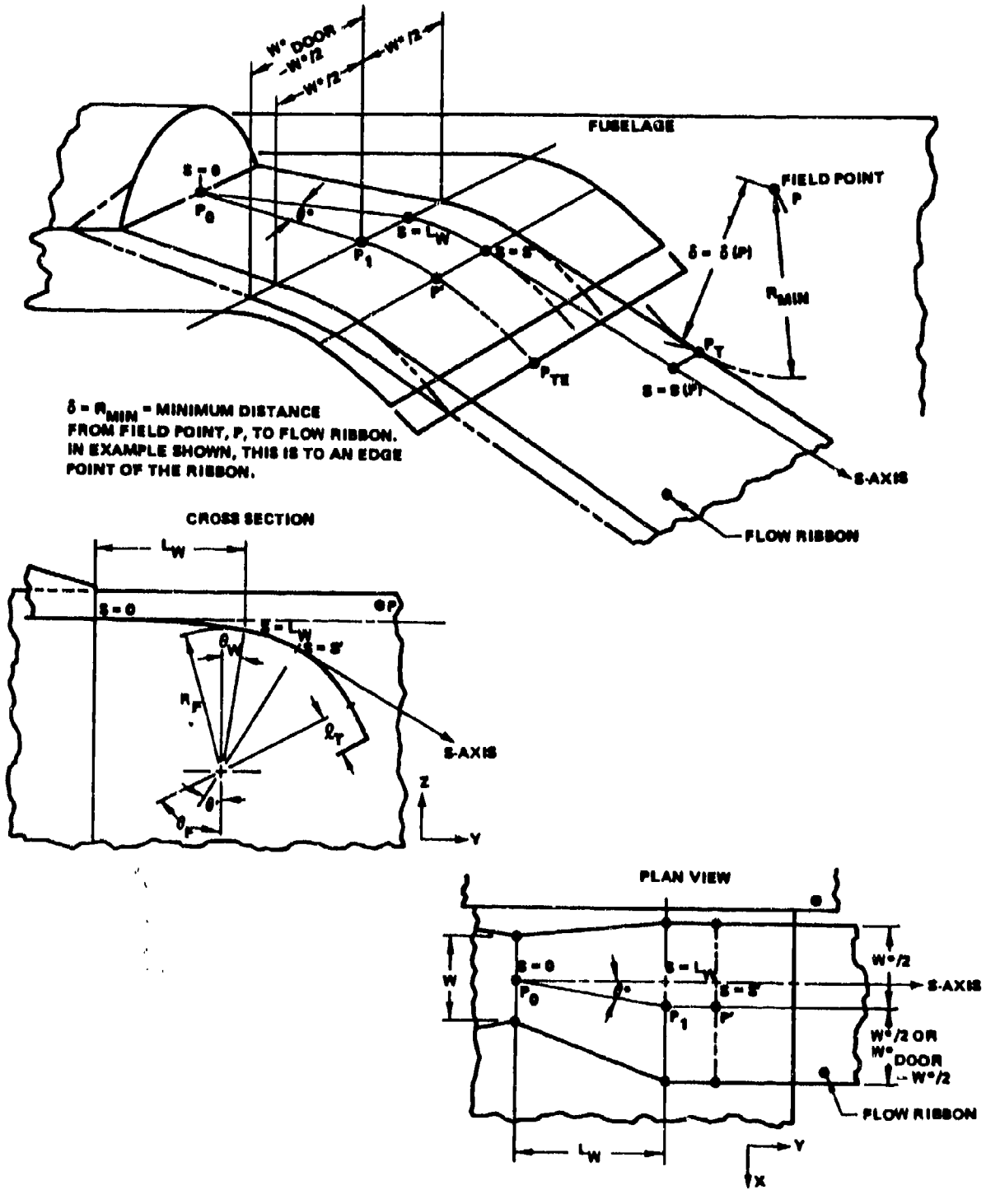
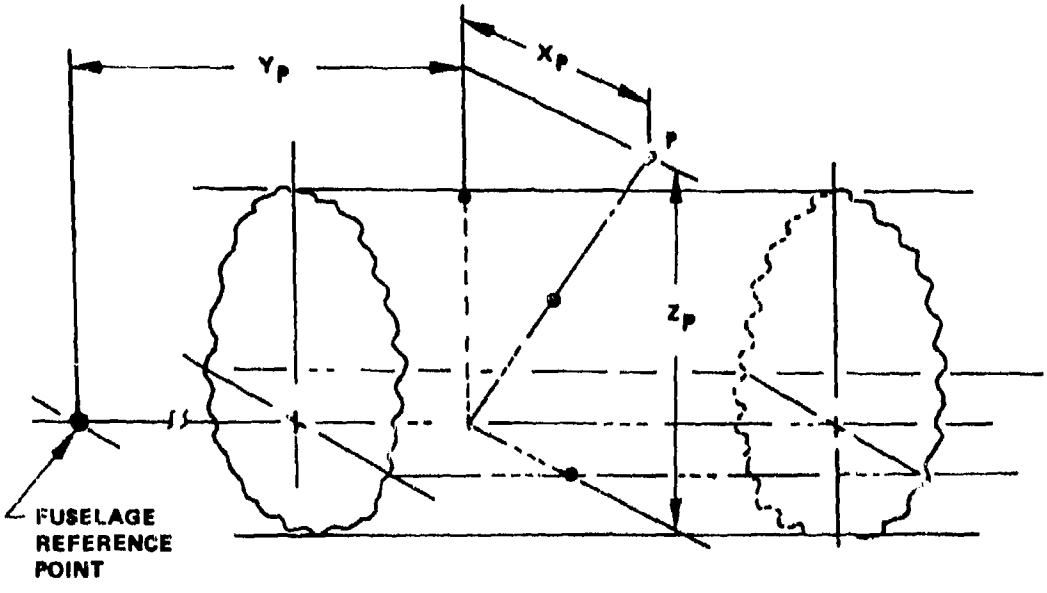


Figure 3. General Geometry for S and δ



NOTE: X_P = TYPICALLY REFERRED TO AS BUTTOCK LINE (BL)
Y_P = TYPICALLY REFERRED TO AS BODY STATION (BS)
Z_P = TYPICALLY REFERRED TO AS WATERLINE (WL) COORDINATE OF P

Figure 4. General Coordinate System for Points

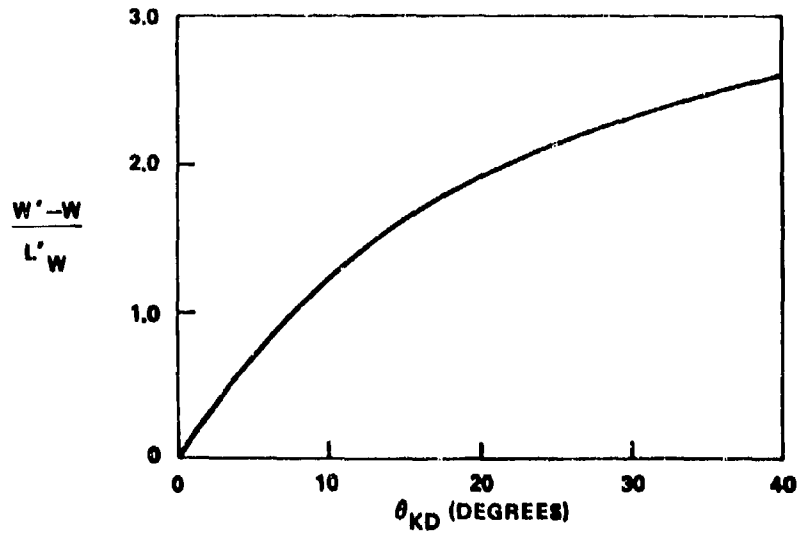


Figure 5. Dependence of Flow Spreading on Effective Nozzle Kickdown Angle

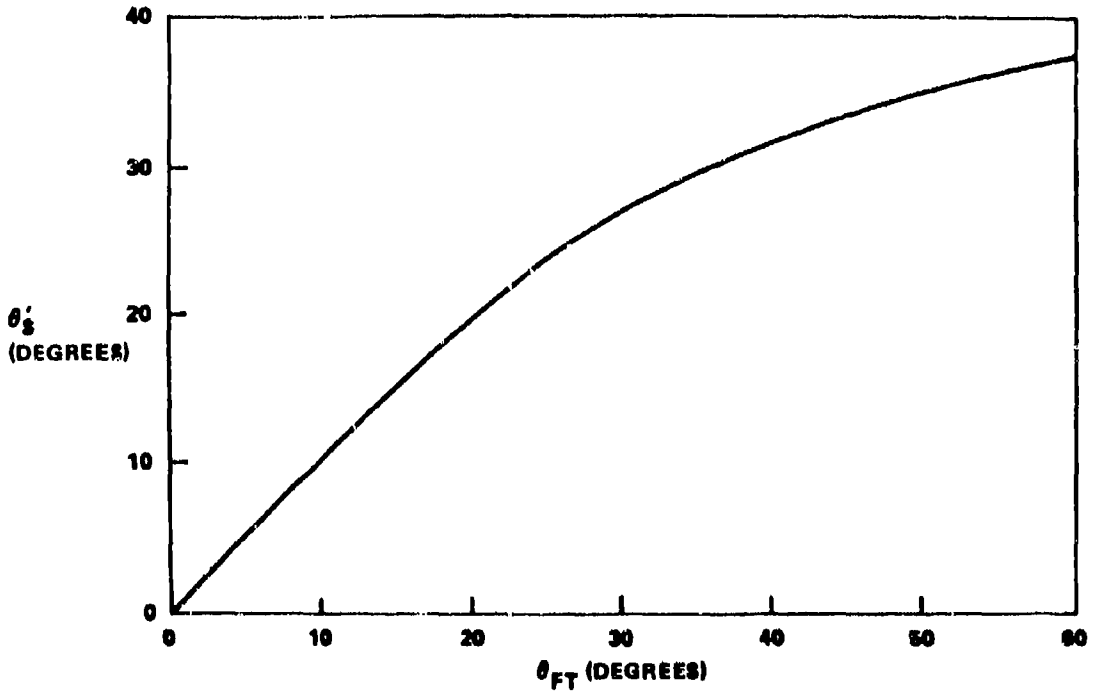


Figure 6. Dependence of Static Trail-Off Angle, θ'_S, on Static Flow-Turning Angle

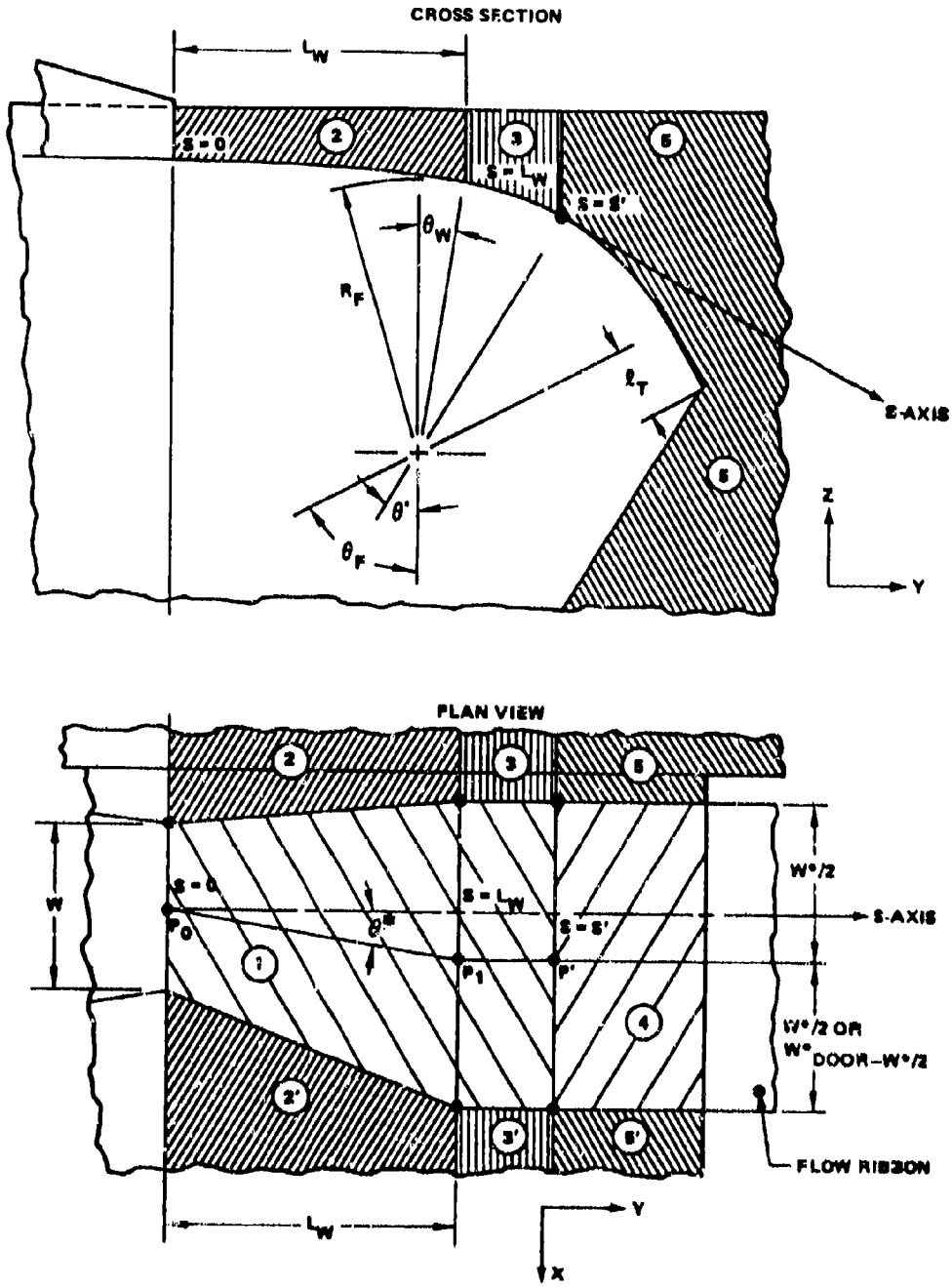


Figure 7. δ-Computation Regions

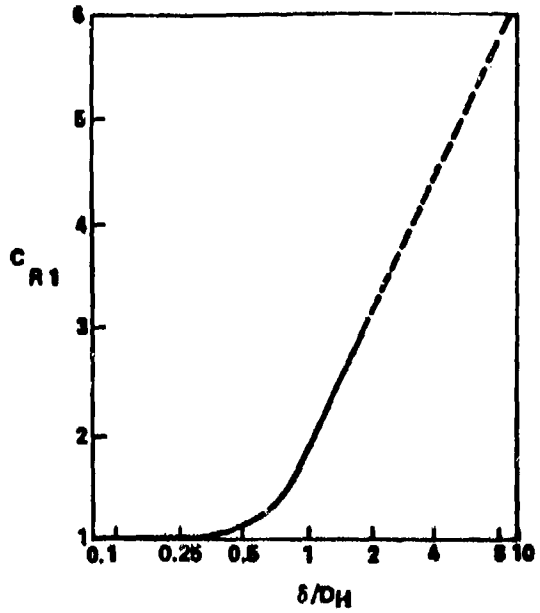


Figure 8. Final Correction, C_{R1}, to Obtain f_{R1}

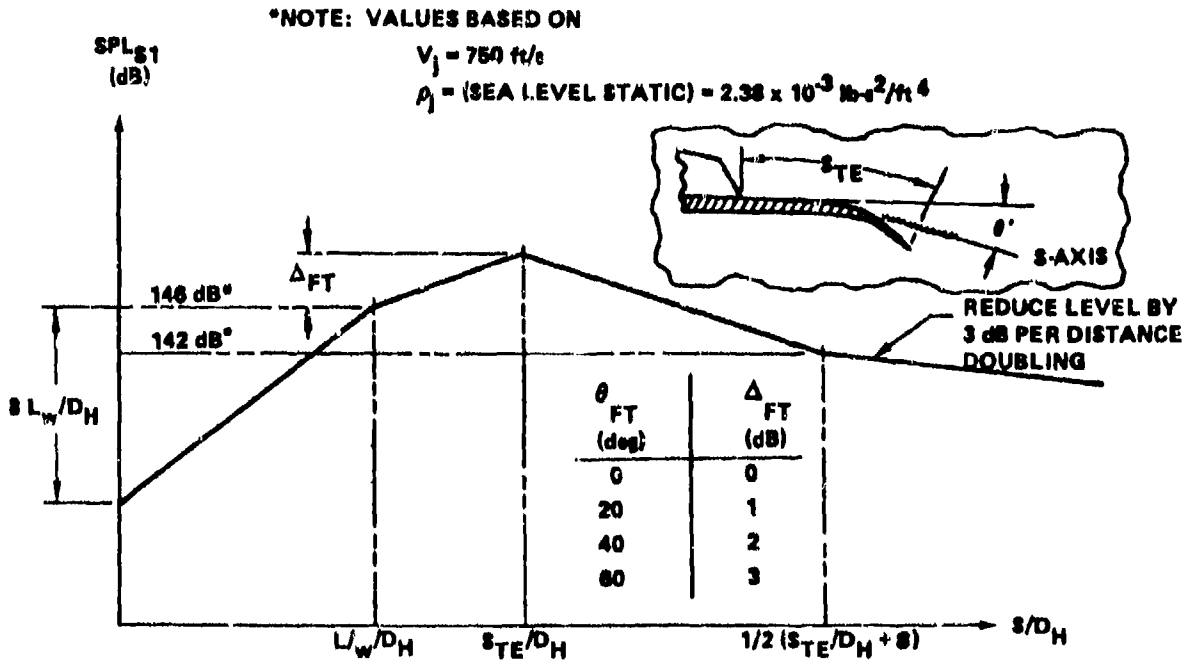


Figure 9. Construction for Determining Reference Static Peak Jet Mixing Noise Level, SPL_{S1}

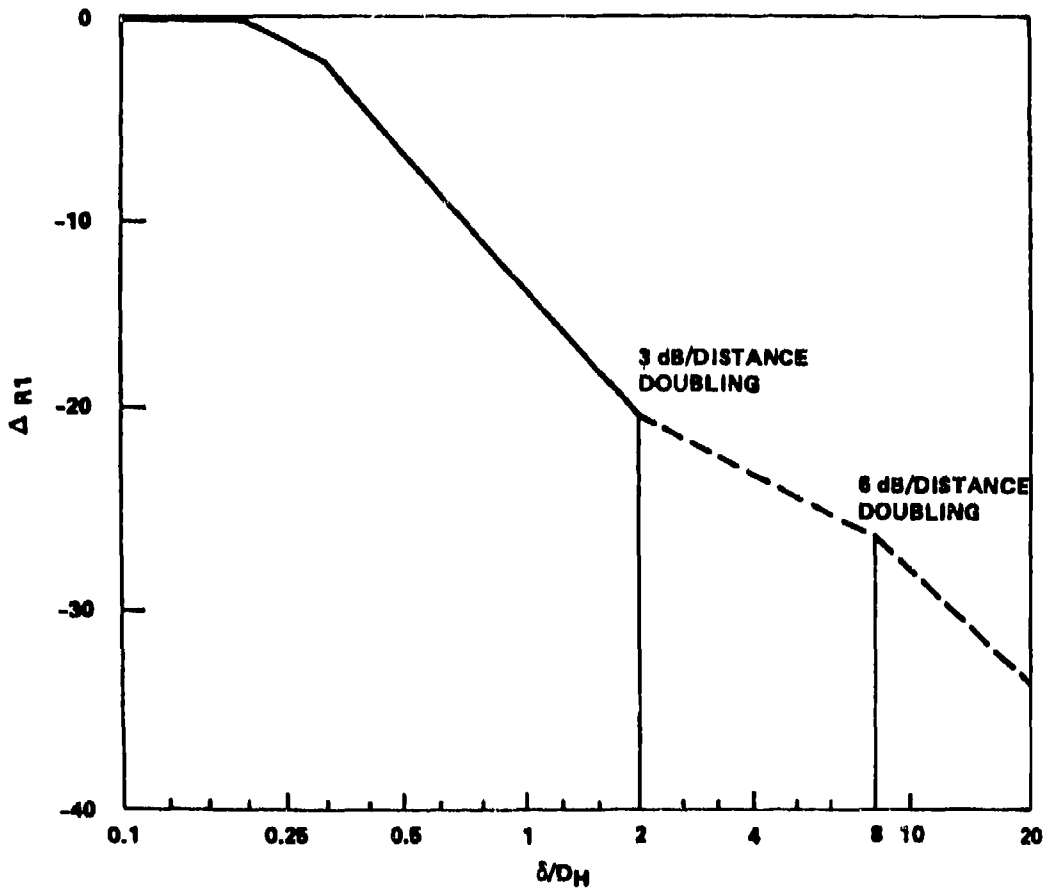


Figure 10. Final Correction, Δ_{R1} , to Obtain SPL_{R1}

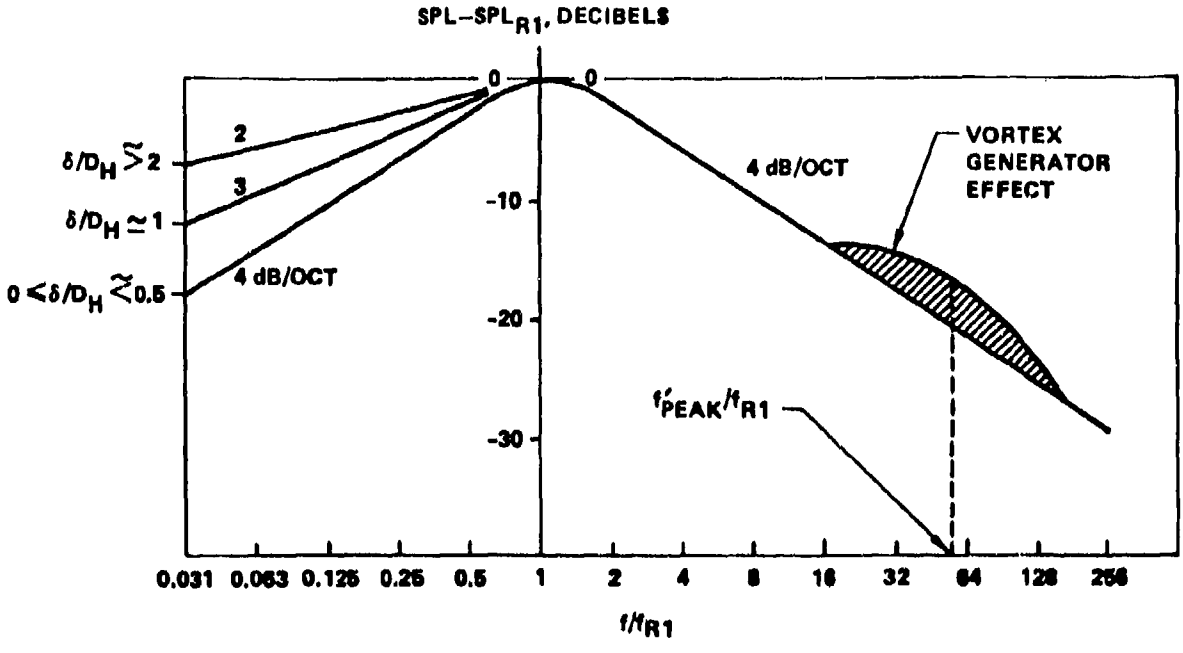


Figure 11. Spectrum Shape for Jet Mixing Noise (No Vortex Generators Present)

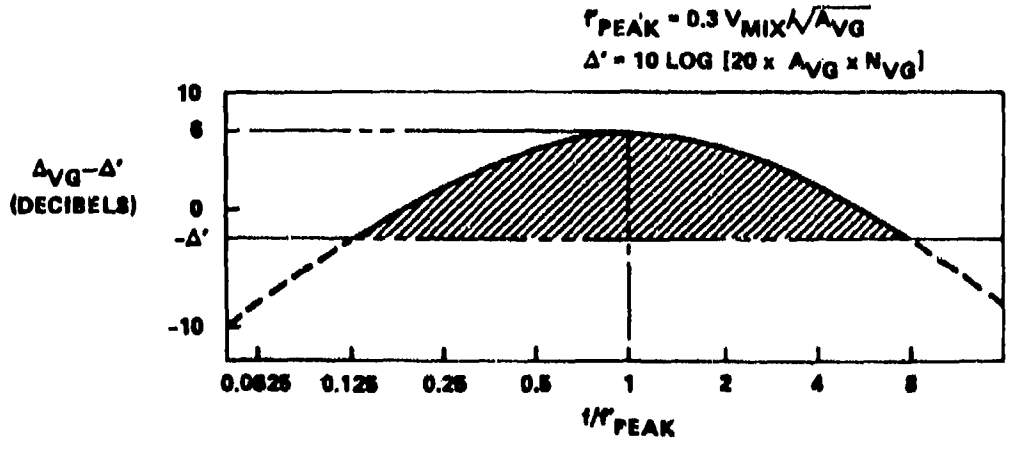


Figure 12. Adjustment to Jet Noise Mixing Spectrum for Vortex Generator Effects

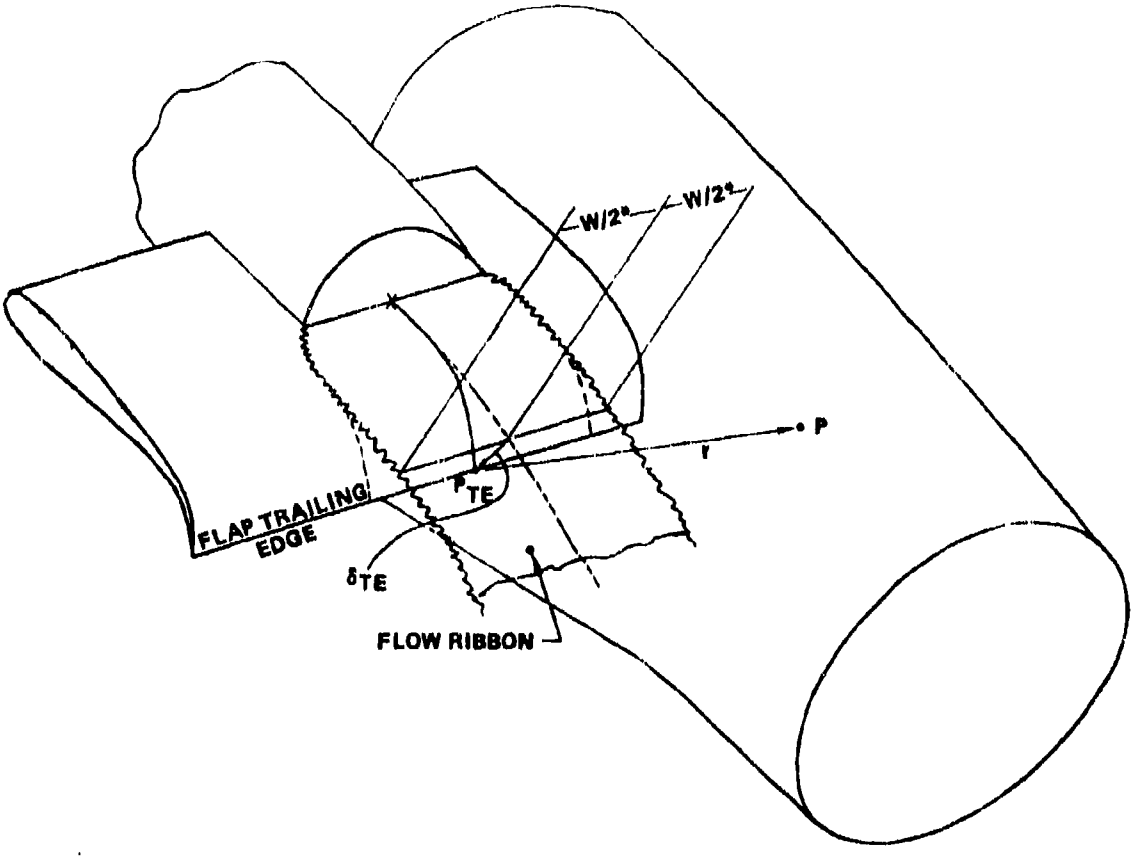


Figure 13. Conceptual Geometry for Trailing-Edge Noise Model

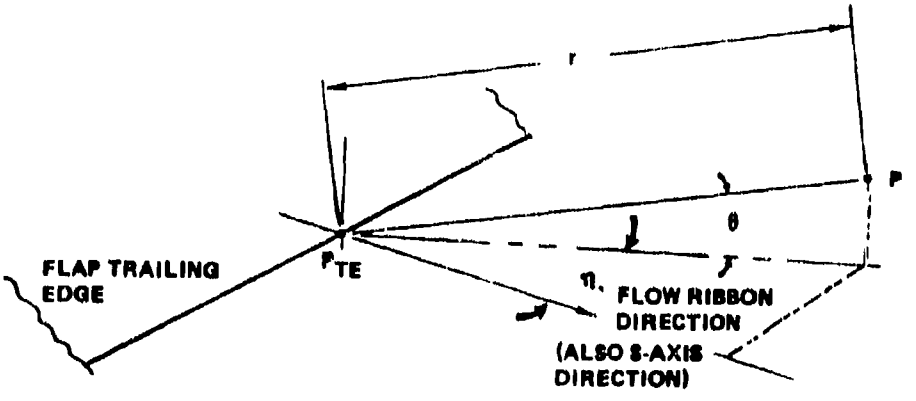


Figure 14. Coordinate Geometry for Field Point P, Relative to Trailing-Edge Point P_{TE}

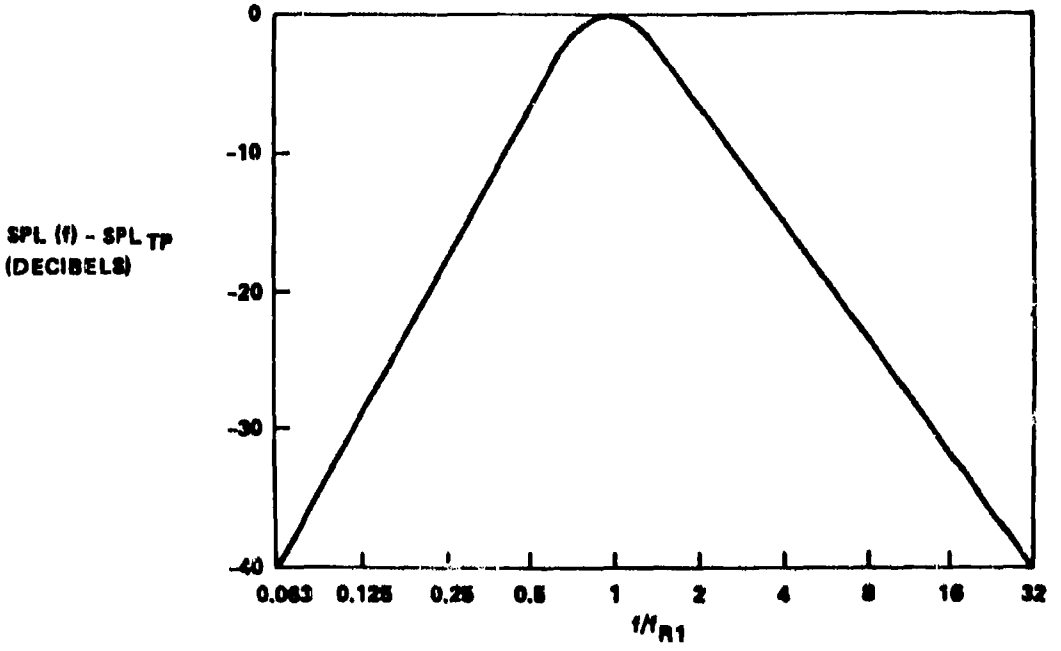


Figure 15. Dimensionless Trailing-Edge Noise Spectum

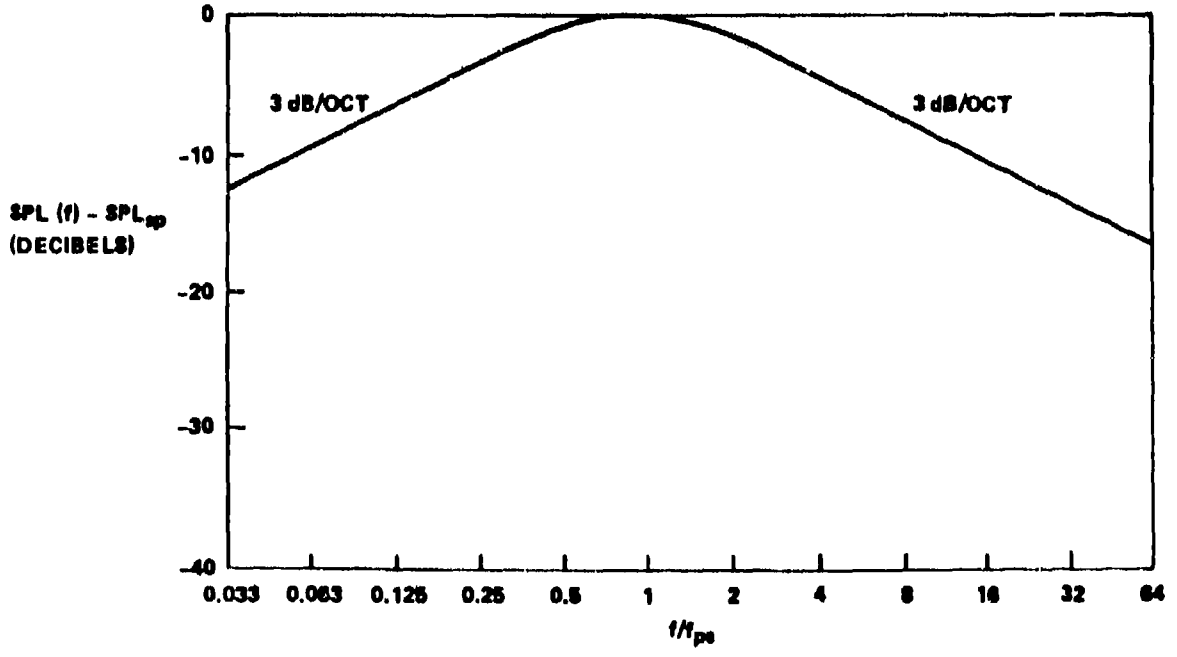


Figure 16. Dimensionless Separation Noise Spectrum

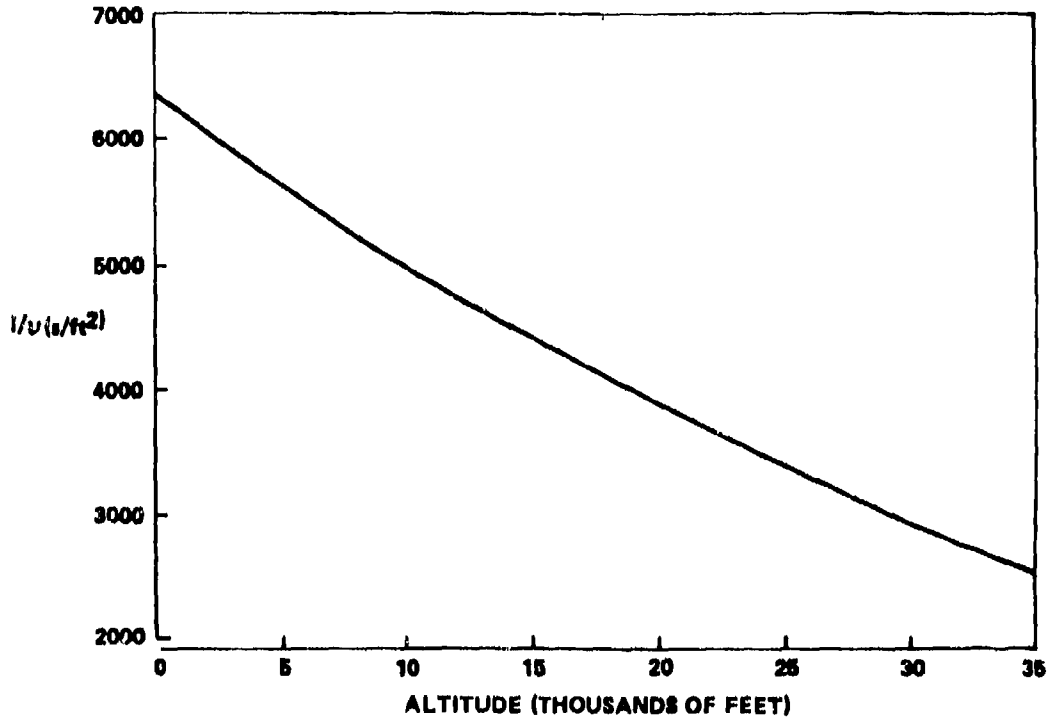


Figure 17. Variation of Kinematic Viscosity With Altitude

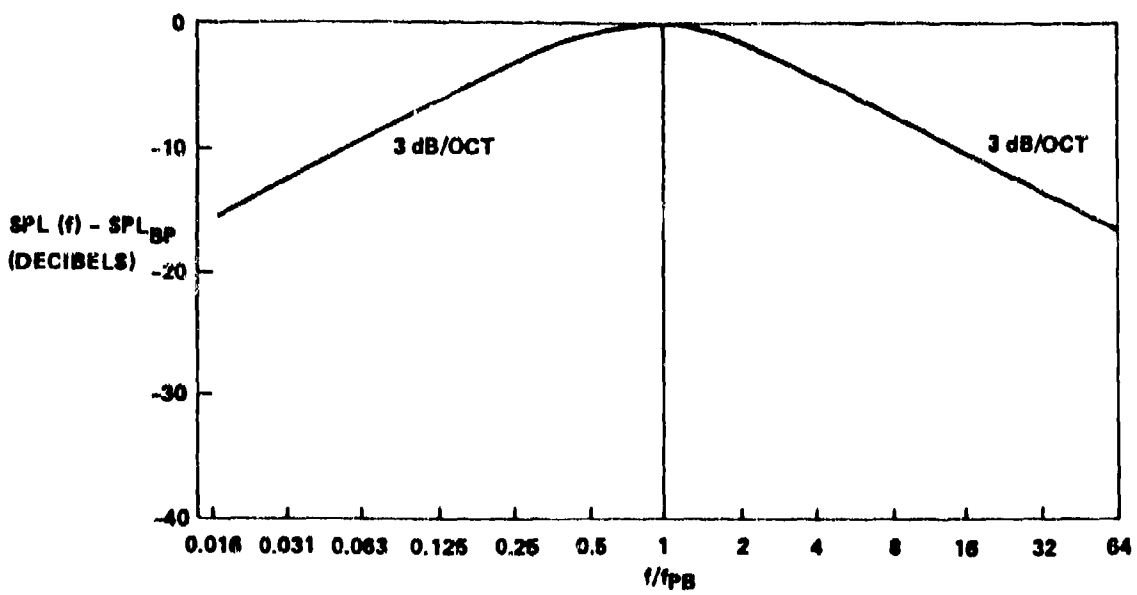


Figure 18. Dimensionless Turbulent Boundary Layer Noise Spectrum

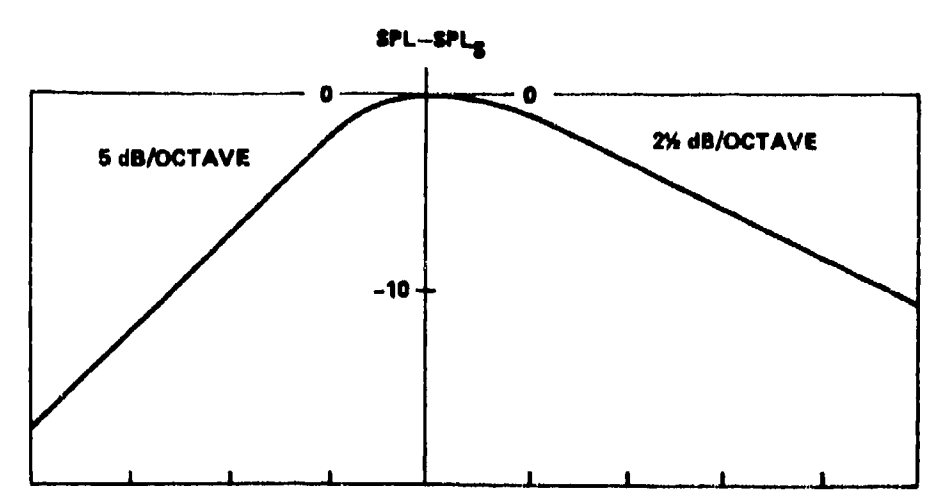


Figure 19. Spectrum Shape for Shock Noise

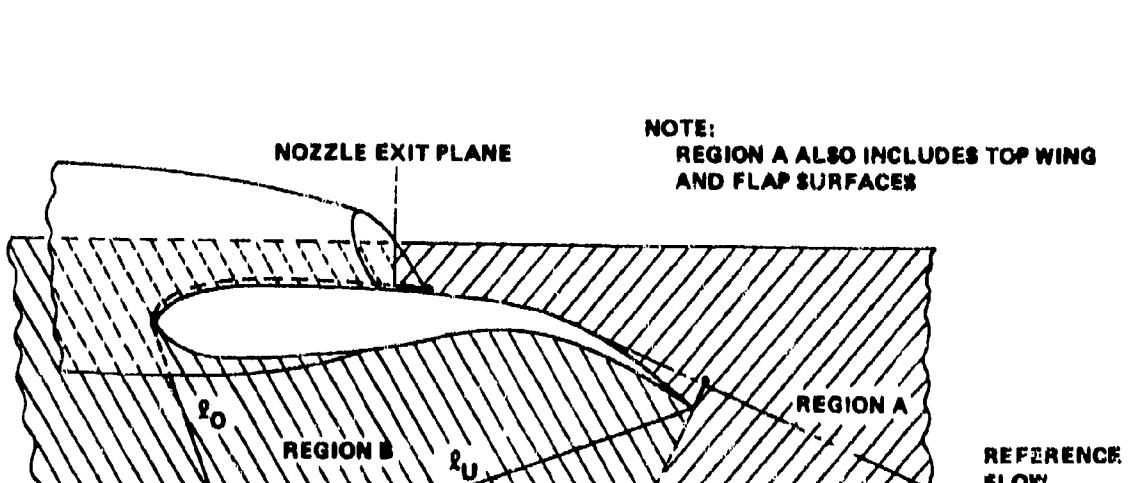


Figure 20. General Indication of Length Scales for Region B Field Points

Region	R_x	R_y	R_z
①	0	0	0
②	$X_p - X_0 + \frac{W}{2}$	$Y_p - Y_0$	$Z_p - Z_0$
②′	$X_p - X_0 - \frac{W}{2}$	$Y_p - Y_0$	$Z_p - Z_0$
③	$X_p - X_1 + \frac{W^*}{2}$	$Y_p - Y_1$	$Z_p - Z_1$
③′	$X_p - X_1 - Q$	$Y_p - Y_1$	$Z_p - Z_1$
	where $Q = \begin{cases} \frac{W^*}{2} \text{ ; side door closed} \\ (W^*_{DOOR} - \frac{W^*}{2}) \text{; door open} \end{cases}$		
④	0	$Y_p - Y'_p$	$Z_p - Z'_p$
⑤	$X_p - X'_p + \frac{W^*}{2}$	$Y_p - Y'_p$	$Z_p - Z'_p$
⑤′	$X_p - X'_p - Q$	$Y_p - Y'_p$	$Z_p - Z'_p$
	where Q is as for ③′		

Figure 21. Expressions for R_x, R_y, and R_z

Region	r_x	r_y	r_z
①	1	0	0
②	$X_1 - X_0 - \frac{W^*}{2} + \frac{W}{2}$	L_w	$Z_1 - Z_0$
②′	$X_1 - X_0 + Q - \frac{W}{2}$	L_w	$Z_1 - Z_0$
	where $Q = \begin{cases} \frac{W^*}{2} \text{ ; side door closed} \\ (W^*_{DOOR} - \frac{W^*}{2}) \text{; door open} \end{cases}$		
③	0	$Y'_p - Y_1$	$Z'_p - Z_1$
③′	0	$Y'_p - Y_1$	$Z'_p - Z_1$
④	0	$\cos\theta'$	$-\sin\theta'$
⑤	0	$\cos\theta'$	$-\sin\theta'$
⑤′	0	$\cos\theta'$	$-\sin\theta'$

Figure 22. Expressions for r_x, r_y, and r_z

APPENDIX B
TABULATIONS AND PLOTS OF EXTERIOR SURFACE NOISE ESTIMATES FOR A SMALL STOL AIRPLANE

APPENDIX B TABLE OF CONTENTS

SECTION I

COMPUTER TABULATIONS FOR FIELD POINT NOISE LEVELS AT STOL OPERATION DUE TO INBOARD ENGINES

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**********************************

PROGRAM USBEST-VERSION 06/MAY/78
UPDATED MARCH,1979..L.BUTZEL
GENERATES SPL ESTIMATE OF EXTERIOR
FUSELAGE/FLAP,WING FLUCTUATING
PRESSURE LEVELS FOR USB AIRCRAFT

AUTHORS=L.BUTZEL,W.LUNDT
USER DOCUMENTATION=D6-XXXXX
RUN DATE= 79/03/21.

**********************************
```

A/P GEOMETRY CHANGES ARE

PARAM	NEW	OLD
THUKD	20.0	-.1
THDKU	0.0	-.1
THDKI	0.0	-.1
THIKD	12.0	-.1
THTB	0.0	-.1
THSK	12.0	-.1
THW	19.0	-.1
REFF	770.0	-.1
ADOOR	0.0	-.1
AVG	5.0	-.1
NVG	12.0	-1.0
W	54.0	-.1
LW	80.0	-.1
RF	26.0	-.1
X0	88.0	-.1
Y0	345.0	-.1
Z0	213.0	-.1
Z1	201.0	-.1
LT	25.0	-.1
YR	0.0	-.1
LFAN	150.0	-.1
XBBL	57.0	-.1

CASE 1,B01,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	168.	57.	133.
FIELD POINT	460.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 115.4 DELTA = 9.1

PEAK JET MIX LEVEL= 139. DB AT 113. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 117. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 94. DB AT 110. HZ
PEAK SEP LEVEL= 124. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 115. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	132.	98.	81.	124.	88.	132.8
31.	133.	99.	84.	124.	88.	133.9
40.	135.	101.	87.	124.	89.	135.2
50.	136.	102.	89.	123.	89.	136.3
63.	137.	104.	92.	123.	90.	137.5
80.	138.	105.	93.	122.	90.	138.4
100.	139.	106.	94.	122.	90.	138.7
125.	139.	107.	94.	121.	90.	138.7
160.	138.	109.	93.	121.	90.	138.3
200.	137.	110.	91.	120.	89.	137.4
250.	136.	112.	89.	120.	89.	136.2
315.	135.	113.	86.	119.	89.	134.9
400.	133.	114.	83.	119.	88.	133.6
500.	132.	115.	81.	118.	88.	132.4
630.	132.	117.	78.	117.	87.	132.3
800.	132.	117.	75.	116.	87.	132.2
1000.	132.	117.	73.	116.	86.	131.8
1250.	131.	117.	70.	115.	85.	131.2
1600.	130.	116.	67.	114.	85.	130.3
2000.	129.	115.	65.	113.	84.	129.3
2500.	128.	113.	62.	112.	83.	128.0
3150.	126.	112.	59.	111.	82.	126.4
4000.	124.	111.	57.	111.	81.	124.5
5000.	122.	109.	54.	110.	81.	122.5

OASPL 148.4 126.6 101.9 133.8 101.5 148.6

CASE 2,B02,BKRL (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	460.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 131.7 DELTA = 16.1

PEAK JET MIX LEVEL= 130. DB AT 105. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 108. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 79. DB AT 110. HZ
PEAK SEP LEVEL= 124. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 115. HZ

SPL-IN DB RE 200 MICROBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	124.	89.	66.	124.	88.	127.0
31.	126.	90.	69.	124.	88.	127.8
40.	127.	92.	72.	124.	89.	128.6
50.	128.	93.	74.	123.	89.	129.4
63.	129.	94.	77.	123.	90.	130.2
80.	130.	96.	79.	122.	90.	130.6
100.	130.	97.	79.	122.	90.	130.7
125.	130.	98.	79.	121.	90.	130.5
160.	129.	100.	78.	121.	90.	130.0
200.	128.	101.	76.	120.	89.	129.0
250.	127.	102.	74.	120.	89.	127.9
315.	126.	104.	71.	119.	89.	126.7
400.	124.	105.	68.	119.	88.	125.4
500.	123.	106.	66.	118.	88.	124.3
630.	123.	107.	63.	117.	87.	124.1
800.	123.	108.	60.	116.	87.	123.8
1000.	123.	108.	58.	116.	86.	123.4
1250.	122.	108.	55.	115.	85.	122.8
1600.	121.	107.	52.	114.	85.	121.9
2000.	120.	106.	50.	113.	84.	120.9
2500.	119.	104.	47.	112.	83.	119.7
3150.	117.	103.	45.	111.	82.	118.2
4000.	115.	102.	42.	111.	81.	116.5
5000.	113.	100.	39.	110.	81.	114.9
OASPL	139.9	117.5	87.1	133.8	101.5	140.8

CASE 3,B03,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	168.	57.	133.
FIELD POINT	460.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 148.1 DELTA = 41.3

PEAK JET MIX LEVEL= 120. DB AT 888. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 99. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 96. DB AT 110. HZ
PEAK SEP LEVEL= 104. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 115. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	114.	80.	83.	103.	88.	114.5
31.	115.	81.	86.	103.	88.	115.3
40.	116.	83.	88.	103.	89.	116.1
50.	117.	84.	91.	103.	89.	116.9
63.	118.	85.	94.	103.	90.	117.7
80.	118.	87.	95.	102.	90.	118.6
100.	119.	88.	96.	102.	90.	119.4
125.	120.	89.	96.	101.	90.	120.1
160.	121.	91.	95.	101.	90.	120.6
200.	120.	92.	93.	100.	89.	120.5
250.	120.	93.	91.	100.	89.	120.2
315.	120.	95.	88.	99.	89.	119.9
400.	119.	96.	85.	98.	88.	119.0
500.	118.	97.	83.	98.	88.	117.8
630.	118.	98.	80.	97.	87.	117.7
800.	118.	99.	77.	96.	87.	117.6
1000.	117.	99.	75.	95.	86.	117.3
1250.	117.	99.	72.	94.	85.	116.7
1600.	116.	98.	69.	93.	85.	115.8
2000.	115.	97.	67.	93.	84.	114.7
2500.	113.	95.	64.	92.	83.	113.4
3150.	112.	94.	61.	91.	82.	111.8
4000.	110.	93.	59.	90.	81.	109.9
5000.	108.	91.	56.	89.	81.	107.9
OASPL	131.3	108.4	103.8	113.4	101.5	131.4

CASE 4,B04,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAF=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	500.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 149.0 DELTA = 30.8

PEAK JET MIX LEVEL= 123. DB AT 176. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 101. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 101. DB AT 110. HZ
PEAK SEP LEVEL= 107. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 108. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	MN	TE	SEP	TBL	SUM
25.	116.	82.	88.	107.	88.	116.7
31.	117.	84.	90.	107.	88.	117.5
40.	118.	85.	93.	107.	89.	118.6
50.	119.	86.	96.	107.	89.	119.5
63.	120.	88.	98.	106.	90.	120.4
80.	121.	89.	100.	106.	90.	121.4
100.	122.	91.	101.	105.	90.	122.3
125.	123.	92.	101.	105.	90.	122.8
160.	123.	93.	100.	104.	90.	122.9
200.	123.	95.	98.	104.	89.	122.7
250.	122.	96.	95.	103.	89.	122.3
315.	121.	97.	93.	103.	88.	121.4
400.	120.	99.	90.	102.	88.	120.1
500.	119.	100.	87.	101.	87.	118.8
630.	119.	101.	85.	101.	87.	118.7
800.	118.	101.	82.	100.	86.	118.6
1000.	118.	101.	79.	99.	86.	118.3
1250.	118.	101.	77.	98.	85.	117.7
1600.	117.	100.	74.	97.	84.	116.8
2000.	116.	99.	71.	97.	84.	115.7
2500.	114.	98.	69.	96.	83.	114.4
3150.	113.	96.	66.	95.	82.	112.8
4000.	111.	95.	63.	94.	81.	110.9
5000.	109.	94.	61.	93.	80.	108.9
OASPL	133.2	110.9	108.4	117.3	101.5	133.3

CASE 5,B05,8750 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S IDOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	500.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 165.3 DELTA = 5.7

PEAK JET MIX LEVEL= 138. DB AT 91. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 117. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 96. DB AT 110. HZ
PEAK SEP LEVEL= 97. DB AT 33. HZ
PEAK TBL LEVEL= 106. DB AT 343. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	133.	99.	83.	97.	99.	132.5
31.	134.	100.	86.	97.	100.	133.7
40.	135.	101.	89.	97.	101.	135.2
50.	136.	103.	91.	97.	102.	136.4
63.	137.	104.	94.	96.	103.	137.4
80.	138.	105.	95.	96.	103.	137.8
100.	138.	107.	96.	95.	104.	137.8
125.	138.	108.	96.	95.	104.	137.5
160.	137.	109.	95.	94.	105.	136.6
200.	135.	111.	93.	94.	105.	135.4
250.	134.	112.	91.	93.	105.	134.1
315.	133.	113.	88.	93.	106.	132.8
400.	131.	115.	85.	92.	105.	131.5
500.	130.	116.	83.	91.	105.	130.2
630.	130.	117.	80.	90.	105.	130.2
800.	130.	117.	77.	90.	104.	130.1
1000.	130.	117.	75.	89.	104.	129.8
1250.	129.	117.	72.	88.	103.	129.2
1600.	128.	116.	69.	87.	103.	128.3
2000.	127.	115.	67.	86.	102.	127.2
2500.	126.	114.	64.	85.	102.	125.9
3150.	124.	112.	61.	85.	101.	124.3
4000.	122.	111.	59.	84.	101.	122.5
5000.	120.	110.	56.	83.	100.	120.5

OASPL 147.4 126.9 103.9 107.0 117.2 147.5

CASE 6,B06,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	500.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 181.6 DELTA = 19.5

PEAK JET MIX LEVEL= 123. DB AT 86. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 104. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 52. DB AT 110. HZ
PEAK SEP LEVEL= 89. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 108. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	119.	85.	39.	88.	88.	119.0
31.	120.	86.	41.	89.	88.	120.1
40.	121.	88.	44.	89.	89.	121.4
50.	123.	89.	47.	88.	89.	122.5
63.	123.	90.	49.	88.	90.	123.2
80.	123.	92.	51.	87.	90.	123.4
100.	123.	93.	52.	87.	90.	123.3
125.	123.	94.	52.	86.	90.	122.8
160.	122.	96.	51.	86.	90.	121.7
200.	120.	97.	49.	85.	89.	120.5
250.	119.	98.	46.	85.	89.	119.2
315.	118.	100.	44.	84.	88.	117.9
400.	116.	101.	41.	84.	88.	116.6
500.	115.	102.	38.	83.	87.	115.4
630.	115.	103.	35.	82.	87.	115.4
800.	115.	104.	33.	81.	86.	115.3
1000.	115.	104.	30.	80.	86.	115.0
1250.	114.	103.	28.	80.	85.	114.4
1600.	113.	103.	25.	79.	84.	113.5
2000.	112.	101.	22.	78.	84.	112.4
2500.	111.	100.	20.	77.	83.	111.1
3150.	109.	99.	17.	76.	82.	109.5
4000.	107.	97.	14.	75.	81.	107.6
5000.	105.	96.	12.	75.	80.	105.7
OASPL	133.0	113.3	59.4	98.7	101.5	133.0

CASE 7,B07,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	550.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 190.9 DELTA = 58.1

PEAK JET MIX LEVEL= 113. DB AT 245. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 94. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 100. DB AT 110. HZ
PEAK SEP LEVEL= 82. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 100. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	109.	75.	87.	81.	88.	108.6
31.	109.	76.	89.	81.	89.	109.3
40.	110.	78.	92.	81.	89.	110.0
50.	111.	79.	95.	81.	89.	110.7
63.	111.	80.	97.	81.	90.	111.5
80.	112.	82.	99.	80.	90.	112.2
100.	113.	83.	100.	80.	90.	112.9
125.	113.	84.	100.	79.	90.	113.5
160.	114.	86.	99.	79.	90.	113.9
200.	114.	87.	97.	78.	89.	113.8
250.	113.	88.	94.	78.	89.	113.4
315.	113.	90.	92.	77.	88.	113.1
400.	112.	91.	89.	76.	88.	112.4
500.	111.	92.	86.	76.	87.	111.2
630.	111.	93.	83.	75.	87.	111.2
800.	111.	94.	81.	74.	86.	111.1
1000.	111.	94.	78.	73.	86.	110.7
1250.	110.	94.	76.	72.	85.	110.1
1600.	109.	93.	73.	71.	84.	109.2
2000.	108.	92.	70.	71.	83.	108.2
2500.	107.	90.	68.	70.	83.	106.8
3150.	105.	89.	65.	69.	82.	105.2
4000.	103.	88.	62.	68.	81.	103.3
5000.	101.	86.	60.	67.	80.	101.3
OASPL	124.7	103.4	107.4	91.4	101.4	124.9

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CASE  8,B08,ST50 (STOL FLAPS=50)

  ALT= 6500. FT     USB =50. DEG  R/RD  = .848
  VA =  110. FT/S   DOOR= CLOSED  THETAS= 5. DEG
  VJ =  680. FT/S   VGS = UP      THETAP=33. DEG

  RIBBON        STA    WL   BL(IN)  BL(OUT)
    AT NOZ EX   345.  213.    61.     115.
    AT WNG TE   425.  201.    57.     133.
    AT TR OFF   431.  198.    57.     133.
    AT TR EDG   460.  179.    57.     133.

  TRAIL EDGE    450.  162.    57.     133.

  FIELD POINT   550.  160.    57.

    FIELD POINT IN ZONE 3 AND IS
       INBOARD OF  FLOW RIBBON
    S= 207.2 DELTA =  32.9


    PEAK JET MIX LEVEL=  118. DB AT  151. HZ
    CORRECTION FOR VGS APPLIED
    DSPL=  5. DB  F1= 2190. HZ
    PEAK NEAR NOZ LEVEL=   98. DB AT  938. HZ
    STE=  122. ,DELTATE=   20.
    PEAK TRAIL EDGE LEVEL=   96. DB AT  110. HZ
    PEAK SEP LEVEL=   79. DB AT   33. HZ
    PEAK TBL LEVEL=   90. DB AT  100. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

   HZ    MIX    NN    TE   SEP   TBL    SUM
   25.   112.   79.   83.   79.   88.   112.1
   31.   113.   80.   86.   79.   89.   113.0
   40.   114.   82.   89.   79.   89.   114.1
   50.   115.   83.   91.   79.   89.   115.0
   63.   116.   85.   94.   78.   90.   116.0
   80.   117.   86.   96.   78.   90.   117.0
  100.   118.   87.   96.   77.   90.   117.7
  125.   118.   89.   96.   77.   90.   117.9
  160.   118.   90.   95.  76.   90.  117.7
  200.   117.   91.   93.   76.   89.   117.4
  250.   117.   93.   91.   75.   89.   116.7
  315.   115.   94.   88.   75.   88.   115.5
  400.   114.   95.   86.   74.   88.   114.1
  500.   113.   97.   83.   73.   87.   112.9
  630.   113.   98.   80.   73.   87.   112.8
  800.   113.   98.   77.   72.   86.   112.7
 1000.   112.   98.   75.   71.   86.   112.4
 1250.   112.   98.   72.   70.   85.   111.8
 1600.   111.   97.   69.   69.   84.   110.9
 2000.   110.   96.   67.   68.   83.   109.8
 2500.   108.   95.   64.   68.   83.   108.5
 3150.   107.   93.   62.   67.   82.   106.9
 4000.   105.   92.   59.   66.   81.   105.0
 5000.   103.   91.   56.   65.   80.   103.0

OASPL 128.1 107.6 104.1  89.1 101.4  128.2
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CASE 9,B09,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	550.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 283.6 DELTA = 7.7

PEAK JET MIX LEVEL= 133. DB AT 74. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 113. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 90. DB AT 110. HZ
PEAK SEP LEVEL= 75. DB AT 33. HZ
PEAK TBL LEVEL= 91. DB AT 109. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	129.	94.	77.	75.	89.	128.6
31.	130.	95.	79.	75.	90.	129.8
40.	131.	97.	82.	75.	90.	131.2
50.	132.	98.	85.	74.	90.	132.2
63.	133.	100.	87.	74.	91.	132.6
80.	133.	101.	89.	74.	91.	132.7
100.	132.	102.	90.	73.	91.	132.4
125.	132.	103.	90.	73.	91.	131.7
160.	130.	105.	89.	72.	91.	130.4
200.	129.	106.	87.	72.	90.	129.1
250.	128.	108.	84.	71.	90.	127.8
315.	126.	109.	82.	70.	90.	126.5
400.	125.	110.	79.	70.	89.	125.2
500.	124.	111.	76.	69.	89.	124.0
630.	124.	113.	74.	68.	88.	124.0
800.	124.	113.	71.	67.	88.	123.9
1000.	123.	113.	68.	67.	87.	123.6
1250.	123.	113.	66.	66.	86.	123.0
1600.	122.	112.	63.	65.	86.	122.1
2000.	121.	111.	60.	64.	85.	121.0
2500.	119.	109.	58.	63.	84.	119.7
3150.	118.	108.	55.	62.	83.	118.2
4000.	116.	107.	52.	62.	82.	116.3
5000.	114.	105.	50.	61.	82.	114.3
OASPL	142.1	122.6	97.6	84.9	102.6	142.2

CASE 13,W01,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	375.	212.	90.	

FIELD POINT IN ZONE 1 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 30.0 DELTA = 3.5

PEAK JET MIX LEVEL= 127. DB AT 191. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 130. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 64. DB AT 110. HZ
PEAK SEP LEVEL= 88. DB AT 33. HZ
PEAK TBL LEVEL= 114. DB AT 912. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	117.	111.	51.	88.	101.	11.3
31.	119.	113.	53.	88.	102.	119.6
40.	120.	114.	56.	88.	104.	121.1
50.	121.	115.	59.	88.	106.	122.4
63.	123.	117.	61.	87.	107.	123.7
80.	124.	118.	63.	87.	108.	125.1
100.	125.	119.	64.	86.	109.	126.3
125.	126.	121.	64.	86.	110.	127.4
160.	127.	122.	63.	85.	111.	128.2
200.	127.	123.	61.	85.	111.	128.6
250.	127.	125.	58.	84.	112.	128.9
315.	126.	126.	56.	84.	112.	129.1
400.	125.	127.	53.	83.	113.	129.3
500.	123.	129.	50.	82.	113.	129.8
630.	123.	130.	47.	82.	113.	130.6
800.	123.	130.	45.	81.	114.	131.0
1000.	123.	130.	42.	80.	114.	131.0
1250.	122.	130.	40.	79.	113.	130.7
1600.	121.	129.	37.	78.	113.	129.8
2000.	120.	128.	34.	77.	113.	128.7
2500.	119.	127.	32.	77.	112.	127.4
3150.	117.	125.	29.	76.	112.	126.1
4000.	115.	124.	26.	75.	111.	124.6
5000.	113.	123.	24.	74.	111.	123.3
OASPL	137.1	139.7	71.4	98.2	125.1	141.7

CASE 14,W02,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	395.	206.	90.	

FIELD POINT IN ZONE 1 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 50.0 DELTA = .5

PEAK JET MIX LEVEL= 132. DB AT 164. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 127. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 84. DB AT 110. HZ
PEAK SEP LEVEL= 95. DB AT 33. HZ
PEAK TBL LEVEL= 121. DB AT 1785. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	123.	108.	71.	94.	103.	123.4
31.	124.	109.	74.	95.	105.	124.7
40.	126.	110.	77.	94.	106.	126.1
50.	127.	112.	79.	94.	108.	127.4
63.	129.	113.	82.	94.	110.	128.8
80.	130.	115.	84.	93.	111.	130.2
100.	131.	116.	84.	93.	113.	131.3
125.	132.	117.	94.	92.	114.	132.0
160.	132.	119.	83.	92.	115.	132.4
200.	132.	120.	81.	91.	116.	132.3
250.	131.	121.	79.	91.	117.	132.0
315.	130.	122.	76.	90.	118.	131.2
400.	129.	124.	73.	89.	119.	130.4
500.	128.	125.	71.	89.	119.	130.0
630.	128.	126.	68.	88.	120.	130.3
800.	127.	127.	65.	87.	120.	130.5
1000.	127.	127.	63.	86.	120.	130.4
1250.	127.	126.	60.	86.	121.	130.0
1600.	126.	126.	57.	85.	121.	129.3
2000.	125.	124.	55.	84.	121.	128.3
2500.	123.	123.	52.	83.	120.	127.2
3150.	122.	122.	50.	82.	120.	126.0
4000.	120.	120.	47.	81.	120.	124.7
5000.	118.	119.	44.	81.	119.	123.5
OASPL	142.1	136.2	92.1	104.6	131.7	143.4

CASE 15,F01,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	432.	199.	60.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 87.0 DELTA = 1.4

PEAK JET MIX LEVEL= 140. DB AT 131. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 123. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 93. DB AT 110. HZ
PEAK SEP LEVEL= 106. DB AT 33. HZ
PEAK TBL LEVEL= 119. DB AT 1298. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	133.	104.	83.	106.	104.	132.7
31.	134.	105.	86.	106.	105.	133.9
40.	135.	106.	89.	106.	107.	135.4
50.	137.	108.	91.	105.	109.	136.7
63.	138.	109.	94.	105.	110.	138.0
80.	139.	110.	95.	104.	112.	139.3
100.	140.	112.	96.	104.	113.	139.9
125.	140.	113.	96.	103.	114.	140.2
160.	140.	114.	95.	103.	115.	140.1
200.	140.	116.	93.	102.	116.	139.6
250.	138.	117.	91.	102.	116.	138.5
315.	137.	118.	88.	101.	117.	137.2
400.	136.	120.	85.	101.	117.	135.9
500.	134.	121.	83.	100.	118.	134.7
630.	134.	122.	80.	99.	118.	134.7
800.	134.	122.	77.	98.	119.	134.6
1000.	134.	123.	75.	97.	119.	134.3
1250.	133.	122.	72.	97.	119.	133.8
1600.	132.	121.	69.	96.	119.	132.9
2000.	131.	120.	67.	95.	119.	131.9
2500.	130.	119.	64.	94.	118.	130.6
3150.	128.	118.	61.	93.	118.	129.1
4000.	126.	116.	59.	92.	117.	127.3
5000.	124.	115.	56.	92.	117.	125.5

OASPL 150.0 132.0 103.9 115.8 130.2 150.1

CASE 16,F02,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	432.	199.	90.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 87.0 DELTA = 1.4

PEAK JET MIX LEVEL= 140. DB AT 131. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 123. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 101. DB AT 110. HZ
PEAK SEP LEVEL= 114. DB AT 33. HZ
PEAK TBL LEVEL= 119. DB AT 1298. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	133.	104.	88.	113.	104.	132.7
31.	134.	105.	90.	114.	105.	134.0
40.	135.	106.	93.	113.	107.	135.4
50.	137.	108.	96.	113.	109.	136.7
63.	138.	109.	98.	113.	110.	138.0
80.	139.	110.	100.	112.	112.	139.3
100.	140.	112.	101.	112.	113.	140.0
125.	140.	113.	101.	111.	114.	140.2
160.	140.	114.	100.	111.	115.	140.1
200.	140.	116.	98.	110.	116.	139.6
250.	138.	117.	95.	110.	116.	138.5
315.	137.	118.	93.	109.	117.	137.2
400.	136.	120.	90.	108.	117.	135.9
500.	134.	121.	87.	108.	118.	134.7
630.	134.	122.	85.	107.	118.	134.7
800.	134.	122.	82.	106.	119.	134.6
1000.	134.	123.	79.	105.	119.	134.3
1250.	133.	122.	77.	104.	119.	133.8
1600.	132.	121.	74.	104.	119.	132.9
2000.	131.	120.	71.	103.	119.	131.9
2500.	130.	119.	69.	102.	118.	130.6
3150.	128.	118.	66.	101.	118.	129.1
4000.	126.	116.	63.	100.	117.	127.3
5000.	124.	115.	61.	99.	117.	125.5
OASPL	150.0	132.0	108.5	123.5	130.2	150.2

CASE 17,F03,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	432.	199.	130.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 87.0 DELTA = 1.4

PEAK JET MIX LEVEL= 140. DB AT 131. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 123. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 96. DB AT 110. HZ
PEAK SEP LEVEL= 117. DB AT 33. HZ
PEAK TBL LEVEL= 119. DB AT 1298. HZ

SPL-IN DB RE 200 MICROBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	133.	104.	83.	117.	104.	132.8
31.	134.	105.	86.	117.	105.	134.0
40.	135.	106.	89.	117.	107.	135.4
50.	137.	108.	91.	116.	109.	136.7
63.	138.	109.	94.	116.	110.	138.0
80.	139.	110.	96.	115.	112.	139.3
100.	140.	112.	96.	115.	113.	140.0
125.	140.	113.	96.	114.	114.	140.2
160.	140.	114.	95.	114.	115.	140.1
200.	140.	116.	93.	113.	116.	139.6
250.	138.	117.	91.	113.	116.	138.5
315.	137.	118.	88.	112.	117.	137.2
400.	136.	120.	85.	112.	117.	135.9
500.	134.	121.	83.	111.	118.	134.8
630.	134.	122.	80.	110.	118.	134.7
800.	134.	122.	77.	109.	119.	134.7
1000.	134.	123.	75.	108.	119.	134.4
1250.	133.	122.	72.	108.	119.	133.8
1600.	132.	121.	69.	107.	119.	132.9
2000.	131.	120.	67.	106.	119.	131.9
2500.	130.	119.	64.	105.	118.	130.6
3150.	128.	118.	61.	104.	118.	129.1
4000.	126.	116.	59.	103.	117.	127.3
5000.	124.	115.	56.	103.	117.	125.5

OASPL 150.0 132.0 104.0 126.7 130.2 150.2

CASE 10,F04,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DUOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	445.	177.	60.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 109.9 DELTA = 10.0

PEAK JET MIX LEVEL= 137. DB AT 116. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 117. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 90. DB AT 110. HZ
PEAK SEP LEVEL= 127. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 118. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	131.	98.	77.	127.	88.	132.2
31.	132.	99.	79.	127.	88.	133.2
40.	133.	100.	82.	127.	89.	134.3
50.	135.	102.	85.	126.	89.	135.3
63.	136.	103.	87.	126.	89.	136.4
80.	137.	104.	89.	125.	90.	137.2
100.	137.	106.	89.	125.	90.	137.6
125.	137.	107.	89.	124.	90.	137.6
160.	137.	108.	88.	124.	90.	137.2
200.	136.	110.	87.	123.	89.	136.4
250.	135.	111.	84.	123.	89.	135.3
315.	134.	112.	81.	122.	89.	134.0
400.	132.	114.	79.	122.	88.	132.7
500.	131.	115.	76.	121.	88.	131.5
630.	131.	116.	73.	120.	87.	131.4
800.	131.	116.	71.	119.	87.	131.2
1000.	130.	117.	68.	119.	86.	130.9
1250.	130.	116.	65.	118.	85.	130.3
1600.	129.	115.	63.	117.	85.	129.4
2000.	128.	114.	60.	116.	84.	128.3
2500.	127.	113.	57.	115.	83.	127.0
3150.	125.	112.	55.	114.	82.	125.5
4000.	123.	110.	52.	113.	81.	123.7
5000.	121.	109.	49.	113.	81.	121.8
OASPL	147.2	126.0	97.2	136.8	101.5	147.6

CASE 11,F05,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	168.	57.	133.
FIELD POINT	445.	177.	90.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 109.9 DELTA = 10.0

PEAK JET MIX LEVEL= 137. DB AT 116. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2,90. HZ
PEAK NEAR NOZ LEVEL= 117. DB AT 938. HZ
STE= 122. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 103. DB AT 110. HZ
PEAK SEP LEVEL= 135. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 118. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	131.	98.	90.	134.	88.	135.9
31.	132.	99.	92.	135.	88.	136.5
40.	133.	100.	95.	134.	89.	136.9
50.	135.	102.	98.	134.	89.	137.4
63.	136.	103.	100.	134.	89.	138.0
80.	137.	104.	102.	133.	90.	138.5
100.	137.	106.	103.	133.	90.	138.6
125.	137.	107.	103.	132.	90.	138.5
160.	137.	108.	102.	132.	90.	138.1
200.	136.	110.	100.	131.	89.	137.4
250.	135.	111.	97.	131.	89.	136.4
315.	134.	112.	95.	130.	89.	135.3
400.	132.	114.	92.	129.	88.	134.1
500.	131.	115.	89.	129.	88.	133.1
630.	131.	116.	87.	128.	87.	132.8
800.	131.	116.	84.	127.	87.	132.4
1000.	130.	117.	81.	126.	86.	132.0
1250.	130.	116.	79.	125.	85.	131.3
1600.	129.	115.	76.	125.	85.	130.4
2000.	128.	114.	73.	124.	84.	129.4
2500.	127.	113.	71.	123.	83.	128.3
3150.	125.	112.	68.	122.	82.	126.9
4000.	123.	110.	65.	121.	81.	125.4
5000.	121.	109.	63.	120.	81.	123.9
OASPL	147.2	126.0	110.6	144.5	101.5	149.1

CASE 12,F06,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S NOOR= CLOSED THETAS= 5. DEG
VJ = 680. FT/S VGS = UP THETAF=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	133.
AT TR OFF	431.	198.	57.	133.
AT TR EDG	460.	179.	57.	133.
TRAIL EDGE	450.	162.	57.	133.
FIELD POINT	445.	177.	130.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLON RIBBON
S= 109.9 DELTA = 10.0

PEAK JET MIX LEVEL= 137. DB AT 116. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 117. DB AT 938. HZ
STE= 192. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 90. DB AT 110. HZ
PEAK SEP LEVEL= 138. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 118. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	131.	99.	77.	138.	88.	138.4
31.	132.	99.	79.	138.	88.	138.8
40.	133.	100.	82.	138.	89.	139.0
50.	135.	102.	85.	137.	89.	139.2
63.	136.	103.	87.	137.	89.	139.5
80.	137.	104.	89.	136.	90.	139.7
100.	137.	106.	90.	136.	90.	139.7
125.	137.	107.	90.	135.	90.	139.5
160.	137.	108.	89.	135.	90.	139.1
200.	136.	110.	87.	134.	89.	138.4
250.	135.	111.	84.	134.	89.	137.5
315.	134.	112.	82.	133.	89.	136.5
400.	132.	114.	79.	133.	88.	135.5
500.	131.	115.	76.	132.	88.	134.6
630.	131.	116.	74.	131.	87.	134.1
800.	131.	116.	71.	130.	87.	133.6
1000.	130.	117.	68.	130.	86.	133.1
1250.	130.	116.	66.	129.	85.	132.4
1600.	129.	115.	63.	128.	85.	131.5
2000.	128.	114.	60.	127.	84.	130.6
2500.	127.	113.	58.	126.	83.	129.5
3150.	125.	112.	55.	125.	82.	128.3
4000.	123.	110.	52.	124.	81.	126.9
5000.	121.	109.	50.	124.	81.	125.6
OASPL	147.2	126.0	97.4	147.8	101.5	150.5

SECTION II

COMPUTER TABULATIONS FOR FIELD POINT NOISE LEVELS AT BRAKE RELEASE DUE TO INBOARD ENGINES

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N>LNH

    ************************************

    PROGRAM USBEST-VERSION 06/MAY/78
    UPDATED MARCH,1979..L.BUTZEL
    GENERATES SPL ESTIMATE OF EXTERIOR
    FUSELAGE/FLAP,WING FLUCTUATING
    PRESSURE LEVELS FOR USB AIRCRAFT

    AUTHORS=L.BUTZEL,W.LUNDT
    USER DOCUMENTATION=D6-XXXXX
    RUN DATE= 79/03/21.

    ************************************


  A/P GEOMETRY CHANGES ARE

  PARAM       NEW         OLD
  THUKD      20.0         -.1
  THDKU       0.0         -.1
  THOKI       0.0         -.1
  THIKO      12.0         -.1
  THTB        0.0         -.1
  THSK       12.0         -.1
  THW        19.0         -.1
  AEFF      770.0         -.1
  ADOOR       0.0         -.1
  AVG         5.0         -.1
  NVG        12.0        -1.0
  W          54.0         -.1
  LW         80.0         -.1
  RF         26.0         -.1
  XO         88.0         -.1
  YO        345.0         -.1
  ZO        213.0         -.1
  Z1        201.0         -.1
  LT         25.0         -.1
  YR          0.0         -.1
  LFAN      150.0         -.1
  XBBL       57.0         -.1
```

CASE 1,B01,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAF=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	460.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 116.7 DELTA = .7

PEAK JET MIX LEVEL= 149. DB AT 89. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 128. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 87. DB AT 94. HZ
PEAK SEP LEVEL= 93. DB AT 4743. HZ
PEAK TBL LEVEL= 126. DB AT 1857. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	143.	108.	75.	68.	108.	143.4
31.	145.	109.	78.	70.	109.	144.6
40.	146.	110.	81.	72.	111.	146.1
50.	147.	112.	83.	73.	113.	147.3
63.	148.	113.	85.	75.	114.	148.2
80.	149.	114.	86.	77.	116.	148.6
100.	149.	116.	87.	78.	118.	148.6
125.	148.	117.	86.	80.	119.	148.3
160.	147.	118.	84.	82.	120.	147.3
200.	146.	120.	82.	83.	121.	146.1
250.	145.	121.	79.	85.	122.	144.8
315.	143.	122.	77.	87.	123.	143.5
400.	142.	124.	74.	88.	123.	142.2
500.	141.	125.	71.	89.	124.	141.0
630.	139.	126.	69.	90.	124.	139.8
800.	139.	127.	66.	90.	125.	139.6
1000.	139.	128.	63.	91.	125.	139.6
1250.	139.	128.	61.	91.	125.	139.4
1600.	138.	128.	58.	92.	126.	138.8
2000.	137.	127.	55.	92.	126.	138.0
2500.	136.	126.	53.	93.	125.	137.0
3150.	135.	125.	50.	93.	125.	135.8
4000.	133.	123.	47.	93.	125.	134.2
5000.	132.	122.	45.	93.	124.	132.7
OASPL	158.2	137.5	94.3	102.7	136.6	158.2

CASE 2,B02,BKRL (BRAKE RELEASE)

```
  ALT=     0. FT     USB = 0. DEG  R/RD  =1.000
  VA =     0. FT/S   DOOR= CLOSED  THETAS= 6. DEG
  VJ =   870. FT/S   VGS = UP      THETAP=19. DEG

  RIBBON        STA     WL   BL(IN) BL(OUT)
    AT NOZ EX   345.   213.    61.     115.
    AT WNG TE   425.   201.    57.     136.
    AT TR OFF   425.   201.    57.     136.
    AT TR EDG   449.   193.    57.     136.

  TRAIL EDGE    449.   193.    57.     136.

  FIELD POINT   460.   160.    57.

     FIELD POINT IN ZONE 3 AND IS
 ABOVE,ON OR UNDER FLOW RIBBON
     S= 126.2 DELTA =  27.7


     PEAK JET MIX LEVEL=  132. DB AT  138. HZ
     CORRECTION FOR VGS APPLIED
     DSPL=  5. DB  F1= 2801. HZ
     PEAK NEAR NOZ LEVEL=  112. DB AT 1200. HZ
     STE=  105. ,DELTATE=    0.
     PEAK TRAIL EDGE LEVEL=  116. DB AT   94. HZ
     PEAK SEP LEVEL=   65. DB AT 4743. HZ
     NO TBL ACTIVITY,A/P VELOCITY TOO SMALL
```

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	126.	91.	105.	40.	0.	126.3
31.	127.	92.	107.	42.	0.	127.3
40.	128.	94.	110.	43.	0.	128.5
50.	129.	95.	113.	45.	0.	129.6
63.	131.	97.	115.	47.	0.	130.7
80.	132.	98.	116.	48.	0.	131.7
100.	132.	99.	116.	50.	0.	132.2
125.	132.	100.	116.	52.	0.	132.3
160.	132.	102.	114.	53.	0.	132.1
200.	132.	103.	112.	55.	0.	131.6
250.	131.	105.	109.	57.	0.	130.7
315.	129.	106.	106.	58.	0.	129.4
400.	128.	107.	104.	59.	0.	128.0
500.	127.	109.	101.	60.	0.	126.8
630.	125.	110.	98.	61.	0.	125.5
800.	125.	111.	96.	62.	0.	125.3
1000.	125.	111.	93.	62.	0.	125.2
1250.	125.	112.	90.	63.	0.	125.0
1600.	124.	111.	88.	63.	0.	124.3
2000.	123.	111.	85.	64.	0.	123.5
2500.	122.	109.	82.	64.	0.	122.5
3150.	121.	108.	80.	65.	0.	121.1
4000.	119.	107.	77.	65.	0.	119.5
5000.	117.	105.	74.	65.	0.	117.7
DASPL	142.2	120.9	123.9	74.3	0.0	142.3

CASE 3,B03,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	460.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 135.8 DELTA = 56.1

PEAK JET MIX LEVEL= 125. DB AT 236. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 105. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 120. DB AT 94. HZ
PEAK SEP LEVEL= 49. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	121.	84.	109.	24.	0.	120.9
31.	121.	86.	111.	26.	0.	121.7
40.	122.	87.	114.	28.	0.	122.7
50.	123.	88.	116.	29.	0.	123.6
63.	123.	90.	119.	31.	0.	124.6
80.	124.	91.	120.	33.	0.	125.4
100.	125.	92.	120.	34.	0.	126.0
125.	125.	94.	119.	36.	0.	126.4
160.	126.	95.	118.	38.	0.	126.4
200.	126.	96.	115.	39.	0.	126.1
250.	125.	98.	113.	41.	0.	125.5
315.	125.	99.	110.	42.	0.	125.2
400.	124.	101.	107.	43.	0.	124.3
500.	123.	102.	105.	44.	0.	123.1
630.	122.	103.	102.	45.	0.	121.8
800.	121.	104.	99.	46.	0.	121.6
1000.	121.	105.	97.	47.	0.	121.5
1250.	121.	105.	94.	47.	0.	121.2
1600.	120.	105.	91.	48.	0.	120.6
2000.	120.	104.	89.	48.	0.	119.8
2500.	119.	103.	86.	48.	0.	118.7
3150.	117.	101.	83.	49.	0.	117.4
4000.	116.	100.	81.	49.	0.	115.7
5000.	114.	99.	78.	49.	0.	113.9
OASPL	136.6	114.2	127.5	58.4	0.0	137.1

```
CASE  4,B04,BKRL (BRAKE RELEASE)

  ALT=     0. FT     USB = 0. DEG  R/RD  =1.000
  VA =     0. FT/S   DOOR= CLOSED  THETAS= 6. DEG
  VJ =   870. FT/S   VGS = UP      THETAP=19. DEG

  RIBBON        STA     WL   BL(IN)  BL(OUT)
    AT NOZ EX   345.   213.    61.     115.
    AT WNG TE   425.   201.    57.     136.
    AT TR OFF   425.   201.    57.     136.
    AT TR EDG   449.   193.    57.     136.

  TRAIL EDGE    449.   193.    57.     136.

  FIELD POINT   500.   190.    57.

    FIELD POINT IN ZONE 3 AND IS
 ABOVE,ON OR UNDER FLOW RIBBON
    S= 154.6 DELTA =  13.5

    PEAK JET MIX LEVEL=  137. DB AT   76. HZ
    CORRECTION FOR VGS APPLIED
    DSPL=  5. DB  F1= 2801. HZ
    PEAK NEAR NOZ LEVEL=  117. DB AT 1200. HZ
    STE=  105. ,DELTATE=    0.
    PEAK TRAIL EDGE LEVEL=  110. DB AT   94. HZ
    PEAK SEP LEVEL=   55. DB AT 4743. HZ
    NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

   HZ    MIX     NN     TE    SEP    TBL     SUM
   25.   133.    97.    98.    30.     0.   133.4
   31.   135.    98.   101.    31.     0.   134.6
   40.   136.    99.   104.    33.     0.   135.9
   50.   137.   101.   106.    35.     0.   136.9
   63.   137.   102.   108.    37.     0.   137.4
   80.   137.   103.   109.    38.     0.   137.4
  100.   137.   105.   109.    40.     0.   137.1
  125.   136.   106.   109.    42.     0.   136.4
  160.   135.   108.   107.    43.     0.   135.1
  200.   134.   109.   105.    45.     0.   133.8
  250.   133.   110.   102.    47.     0.   132.6
  315.   131.   111.   100.    48.     0.   131.2
  400.   130.   113.    97.    49.     0.   129.9
  500.   129.   114.    94.    50.     0.   128.7
  630.   127.   115.    92.    51.     0.   127.5
  800.   127.   117.    89.    52.     0.   127.4
 1000.   127.   117.    86.    52.     0.   127.3
 1250.   127.   117.    84.    53.     0.   127.0
 1600.   126.   117.    81.    53.     0.   126.5
 2000.   125.   116.    78.    54.     0.   125.7
 2500.   124.   115.    76.    54.     0.   124.6
 3150.   123.   114.    73.    54.     0.   123.2
 4000.   121.   112.    70.    55.     0.   121.6
 5000.   119.   111.    68.    55.     0.   119.9

OASPL 146.8 126.5 117.2  64.1   0.0  146.9
```

CASE 5,B05,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	500.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 164.2 DELTA = 14.9

PEAK JET MIX LEVEL= 135. DB AT 73. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 115. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 109. DB AT 94. HZ
PEAK SEP LEVEL= 50. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	131.	95.	98.	25.	0.	131.5
31.	133.	96.	100.	27.	0.	132.6
40.	134.	97.	103.	29.	0.	134.0
50.	135.	99.	106.	30.	0.	134.8
63.	135.	100.	108.	32.	0.	135.2
80.	135.	101.	109.	34.	0.	135.2
100.	135.	103.	109.	35.	0.	134.8
125.	134.	104.	108.	37.	0.	134.1
160.	133.	105.	107.	39.	0.	132.7
200.	131.	107.	104.	40.	0.	131.4
250.	130.	108.	102.	42.	0.	130.1
315.	129.	109.	99.	44.	0.	128.8
400.	127.	111.	96.	45.	0.	127.5
500.	126.	112.	94.	46.	0.	126.3
630.	125.	113.	91.	46.	0.	125.1
800.	125.	114.	88.	47.	0.	125.0
1000.	124.	115.	86.	48.	0.	124.9
1250.	124.	115.	83.	48.	0.	124.7
1600.	124.	115.	80.	49.	0.	124.1
2000.	123.	114.	78.	49.	0.	123.3
2500.	122.	113.	75.	50.	0.	122.2
3150.	120.	112.	72.	50.	0.	120.9
4000.	119.	110.	70.	50.	0.	119.3
5000.	117.	109.	67.	50.	0.	117.5
OASPL	144.6	124.5	116.7	59.7	0.0	144.6

CASE 6,B06,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	500.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 173.7 DELTA = 43.4

PEAK JET MIX LEVEL= 125. DB AT 170. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 105. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 116. DB AT 94. HZ
PEAK SEP LEVEL= 43. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	120.	85.	105.	18.	0.	120.3
31.	121.	86.	107.	19.	0.	121.2
40.	122.	87.	110.	21.	0.	122.2
50.	123.	89.	113.	23.	0.	123.1
63.	124.	90.	115.	25.	0.	124.0
80.	124.	91.	116.	26.	0.	124.9
100.	125.	93.	116.	28.	0.	125.6
125.	125.	94.	115.	30.	0.	125.7
160.	125.	95.	114.	31.	0.	125.4
200.	125.	97.	111.	33.	0.	125.1
250.	124.	98.	109.	35.	0.	124.5
315.	123.	99.	106.	36.	0.	123.5
400.	122.	101.	103.	37.	0.	122.2
500.	121.	102.	101.	38.	0.	120.9
630.	119.	103.	98.	39.	0.	119.6
800.	119.	104.	95.	40.	0.	119.4
1000.	119.	105.	93.	40.	0.	119.3
1250.	119.	105.	90.	41.	0.	119.0
1600.	118.	105.	87.	41.	0.	118.4
2000.	117.	104.	85.	42.	0.	117.6
2500.	116.	103.	82.	42.	0.	116.5
3150.	115.	102.	79.	42.	0.	115.2
4000.	113.	100.	77.	43.	0.	113.6
5000.	112.	99.	74.	43.	0.	111.8
OASPL	135.7	114.5	123.7	52.2	0.0	136.0

CASE 7,807,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	550.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 202.0 DELTA = 29.4

PEAK JET MIX LEVEL= 127. DB AT 109. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 107. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 110. DB AT 94. HZ
PEAK SEP LEVEL= 37. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN.DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	123.	87.	99.	18.	0.	122.7
31.	124.	88.	101.	14.	0.	123.7
40.	125.	90.	104.	16.	0.	124.9
50.	126.	91.	107.	17.	0.	125.9
63.	127.	92.	109.	19.	0.	126.9
80.	127.	94.	110.	21.	0.	127.4
100.	127.	95.	110.	22.	0.	127.5
125.	127.	96.	110.	24.	0.	127.3
160.	127.	98.	108.	26.	0.	126.8
200.	126.	99.	106.	27.	0.	125.8
250.	125.	100.	103.	29.	0.	124.6
315.	123.	101.	100.	30.	0.	123.3
400.	122.	103.	98.	31.	0.	121.9
500.	121.	104.	95.	32.	0.	120.6
630.	119.	105.	92.	33.	0.	119.4
800.	119.	107.	89.	34.	0.	119.3
1000.	119.	107.	87.	35.	0.	119.2
1250.	119.	107.	84.	35.	0.	118.9
1600.	118.	107.	81.	36.	0.	118.3
2000.	117.	106.	79.	36.	0.	117.5
2500.	116.	105.	76.	36.	0.	116.4
3150.	115.	104.	74.	37.	0.	115.1
4000.	113.	102.	71.	37.	0.	113.5
5000.	111.	101.	68.	37.	0.	111.7
OASPL	137.3	116.6	117.8	46.4	0.0	137.4

CASE 8,B08,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAF=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	550.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 211.5 DELTA = 1.0

PEAK JET MIX LEVEL= 143. DB AT 62. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 123. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 82. DB AT 94. HZ
PEAK SEP LEVEL= 36. DB AT 4743. HZ
PEAK TBL LEVEL= 125. DB AT 1400. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	140.	103.	70.	11.	109.	140.3
31.	142.	104.	73.	12.	111.	141.5
40.	143.	106.	76.	14.	112.	142.8
50.	143.	107.	78.	16.	114.	143.3
63.	143.	108.	80.	18.	116.	143.5
80.	143.	110.	81.	19.	117.	143.2
100.	143.	111.	81.	21.	119.	142.6
125.	141.	112.	81.	22.	120.	141.4
160.	140.	114.	79.	24.	121.	140.0
200.	139.	115.	77.	26.	122.	138.8
250.	137.	116.	74.	27.	122.	137.5
315.	136.	118.	72.	29.	123.	136.3
400.	135.	119.	69.	30.	123.	135.1
500.	133.	120.	66.	31.	124.	134.0
630.	132.	122.	64.	32.	124.	133.0
800.	132.	123.	61.	33.	125.	133.0
1000.	132.	123.	58.	33.	125.	133.0
1250.	131.	123.	56.	34.	125.	132.8
1600.	131.	123.	53.	34.	125.	132.4
2000.	130.	122.	50.	35.	125.	131.6
2500.	129.	121.	48.	35.	124.	130.7
3150.	128.	120.	45.	35.	124.	129.6
4000.	126.	118.	42.	36.	123.	128.3
5000.	124.	117.	40.	36.	123.	127.0
OASPL	152.6	132.7	89.2	45.1	136.1	152.8

CASE 9,B09,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
PT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	550.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 221.1 DELTA = 27.4

PEAK JET MIX LEVEL= 127. DB AT 95. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 107. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 107. DB AT 94. HZ
PEAK SEP LEVEL= 33. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP MID SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	123.	87.	96.	8.	0.	123.2
31.	124.	88.	99.	9.	0.	124.2
40.	125.	89.	101.	11.	0.	125.4
50.	126.	91.	104.	13.	0.	126.4
63.	127.	92.	106.	15.	0.	127.2
80.	127.	93.	107.	16.	0.	127.4
100.	127.	95.	107.	18.	0.	127.3
125.	127.	96.	107.	20.	0.	127.1
160.	126.	97.	105.	21.	0.	126.3
200.	125.	99.	103.	23.	0.	125.1
250.	124.	100.	100.	25.	0.	123.8
315.	122.	101.	97.	26.	0.	122.5
400.	121.	103.	95.	27.	0.	121.1
500.	120.	104.	92.	28.	0.	119.9
630.	118.	105.	89.	29.	0.	118.6
800.	118.	106.	87.	30.	0.	118.5
1000.	118.	107.	84.	30.	0.	118.4
1250.	118.	107.	82.	31.	0.	118.2
1600.	117.	107.	79.	31.	0.	117.6
2000.	116.	106.	76.	32.	0.	116.7
2500.	115.	105.	74.	32.	0.	115.7
3150.	114.	104.	71.	32.	0.	114.3
4000.	112.	102.	68.	33.	0.	112.7
5000.	111.	101.	65.	33.	0.	111.0
OASPL	137.1	116.5	115.0	42.2	0.0	137.2

CASE 13,W01,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	375.	212.	90.	

FIELD POINT IN ZONE 1 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 30.0 DELTA = 3.5

PEAK JET MIX LEVEL= 136. DB AT 152. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 138. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 100. DB AT 94. HZ
PEAK SEP LEVEL= 55. DB AT 4743. HZ
PEAK TBL LEVEL= 117. DB AT 1091. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	127.	118.	89.	31.	103.	127.9
31.	129.	119.	91.	32.	105.	129.1
40.	130.	120.	94.	34.	107.	130.6
50.	131.	122.	97.	36.	108.	131.9
63.	133.	123.	99.	37.	110.	133.2
80.	134.	124.	100.	39.	111.	134.6
100.	135.	126.	100.	41.	112.	135.6
125.	136.	127.	100.	42.	113.	136.2
160.	136.	128.	98.	44.	114.	136.5
200.	135.	130.	96.	46.	115.	136.5
250.	135.	131.	93.	47.	115.	136.4
315.	134.	132.	90.	49.	116.	136.1
400.	132.	134.	88.	50.	116.	136.1
500.	131.	135.	85.	51.	116.	136.5
630.	130.	136.	82.	52.	117.	137.2
800.	129.	137.	80.	52.	117.	138.1
1000.	129.	138.	77.	53.	117.	138.5
1250.	129.	138.	74.	54.	117.	138.6
1600.	128.	138.	72.	54.	117.	138.3
2000.	128.	137.	69.	54.	117.	137.5
2500.	126.	136.	66.	55.	116.	136.4
3150.	125.	135.	64.	55.	116.	135.1
4000.	123.	133.	61.	55.	115.	133.6
5000.	122.	132.	58.	55.	115.	132.3
OASPL	145.6	147.5	108.0	64.8	128.6	149.7

CASE 14,W02,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	395.	206.	90.	

FIELD POINT IN ZONE 1 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 50.0 DELTA = .5

PEAK JET MIX LEVEL= 141. DB AT 131. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 135. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 103. DB AT 94. HZ
PEAK SEP LEVEL= 64. DB AT 4743. HZ
PEAK TBL LEVEL= 126. DB AT 2436. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	133.	114.	92.	39.	106.	133.4
31.	135.	115.	94.	40.	108.	134.7
40.	136.	117.	97.	42.	110.	136.1
50.	137.	118.	100.	44.	111.	137.4
63.	139.	120.	102.	45.	113.	138.8
80.	140.	121.	103.	47.	115.	140.0
100.	141.	122.	103.	49.	116.	140.7
125.	141.	124.	102.	50.	118.	141.0
160.	141.	125.	101.	52.	120.	140.9
200.	140.	126.	98.	54.	121.	140.4
250.	139.	128.	96.	55.	122.	139.5
315.	138.	129.	93.	57.	123.	138.4
400.	136.	130.	90.	58.	123.	137.5
500.	135.	132.	88.	59.	124.	136.9
630.	134.	133.	85.	60.	124.	136.6
800.	134.	134.	82.	60.	125.	137.1
1000.	134.	134.	80.	61.	125.	137.3
1250.	133.	135.	77.	62.	126.	137.3
1600.	133.	134.	74.	62.	126.	136.9
2000.	132.	134.	72.	63.	126.	136.2
2500.	131.	132.	69.	63.	126.	135.2
3150.	129.	131.	66.	63.	126.	134.0
4000.	128.	130.	64.	63.	126.	132.8
5000.	126.	128.	61.	64.	125.	131.5
OASPL	150.6	144.0	110.6	72.9	136.9	151.6

CASE 10,F04,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAF=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR OFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	433.	199.	60.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 88.2 DELTA = .7

PEAK JET MIX LEVEL= 149. DB AT 103. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 130. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 88. DB AT 94. HZ
PEAK SEP LEVEL= 87. DB AT 4743. HZ
PEAK TBL LEVEL= 126. DB AT 2053. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	143.	110.	76.	62.	107.	142.7
31.	144.	111.	79.	63.	109.	143.9
40.	145.	113.	82.	65.	111.	145.4
50.	147.	114.	84.	67.	112.	146.7
63.	148.	115.	87.	69.	114.	147.9
80.	149.	117.	88.	70.	116.	148.6
100.	149.	118.	88.	72.	117.	148.9
125.	149.	119.	87.	74.	119.	148.7
160.	148.	121.	86.	75.	120.	148.2
200.	147.	122.	83.	77.	121.	147.1
250.	146.	123.	81.	79.	122.	145.8
315.	144.	125.	78.	80.	123.	144.5
400.	143.	126.	75.	81.	123.	143.2
500.	142.	127.	73.	82.	124.	142.0
630.	140.	129.	70.	83.	124.	140.8
800.	140.	130.	67.	84.	125.	140.7
1000.	140.	130.	65.	84.	125.	140.7
1250.	140.	130.	62.	85.	125.	140.4
1600.	139.	130.	59.	85.	126.	139.9
2000.	138.	129.	56.	86.	126.	139.1
2500.	137.	128.	54.	86.	126.	138.1
3150.	136.	127.	51.	86.	125.	136.8
4000.	134.	125.	48.	87.	125.	135.3
5000.	133.	124.	46.	87.	125.	133.7
OASPL	158.4	139.7	95.4	96.2	136.7	158.5

CASE 11,F05,BKRL (BRAKE RELEASE)

```
  ALT=     0. FT     USB = 0. DEG   R/RD  =1.000
  VA =     0. FT/S   DOOR= CLOSED   THETAS= 6. DEG
  VJ =   870. FT/S   VGS = UP       THETAP=19. DEG

  RIBBON        STA     WL   BL(IN) BL(OUT)
    AT NOZ EX   345.   213.    61.     115.
    AT WNG TE   425.   201.    57.     136.
    AT TR OFF   425.   201.    57.     136.
    AT TR EDG   449.   193.    57.     136.

  TRAIL EDGE    449.   193.    57.     136.

  FIELD POINT   433.   199.    90.

    FIELD POINT IN ZONE 3 AND IS
 ABOVE,ON OR UNDER FLOW RIBBON
    S=   88.2 DELTA =     .7


    PEAK JET MIX LEVEL=  149. DB AT  103. HZ
    CORRECTION FOR VGS APPLIED
    DSPL=  5. DB  F1= 2801. HZ
    PEAK NEAR NOZ LEVEL=  130. DB AT 1200. HZ
    STE=  105. ,DELTATE=    0.
    PEAK TRAIL EDGE LEVEL=   99. DB AT   94. HZ
    PEAK SEP LEVEL=   95. DB AT 4743. HZ
    PEAK TBL LEVEL=  126. DB AT 2053. HZ
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SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	143.	110.	88.	70.	107.	142.7
31.	144.	111.	90.	71.	109.	143.9
40.	145.	113.	93.	73.	111.	145.4
50.	147.	114.	96.	75.	112.	146.7
63.	148.	115.	98.	76.	114.	147.9
80.	149.	117.	99.	78.	116.	148.6
100.	149.	118.	99.	80.	117.	148.9
125.	149.	119.	98.	81.	119.	148.7
160.	148.	121.	97.	83.	120.	148.2
200.	147.	122.	94.	85.	121.	147.1
250.	146.	123.	92.	86.	122.	145.8
315.	144.	125.	89.	88.	123.	144.5
400.	143.	126.	86.	89.	123.	143.2
500.	142.	127.	84.	90.	124.	142.0
630.	140.	129.	81.	91.	124.	140.8
800.	140.	130.	78.	91.	125.	140.7
1000.	140.	130.	76.	92.	125.	140.7
1250.	140.	130.	73.	93.	125.	140.4
1600.	139.	130.	70.	93.	126.	139.9
2000.	138.	129.	68.	93.	126.	139.1
2500.	137.	128.	65.	94.	126.	138.1
3150.	136.	127.	62.	94.	125.	136.8
4000.	134.	125.	60.	94.	125.	135.3
5000.	133.	124.	57.	94.	125.	133.7

OASPL	158.4	139.7	106.7	103.8	136.7	158.5

CASE 12,F06,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS= 6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	345.	213.	61.	115.
AT WNG TE	425.	201.	57.	136.
AT TR DFF	425.	201.	57.	136.
AT TR EDG	449.	193.	57.	136.
TRAIL EDGE	449.	193.	57.	136.
FIELD POINT	433.	199.	130.	

FIELD POINT IN ZONE 3 AND IS
ABOVE,ON OR UNDER FLOW RIBBON
S= 88.2 DELTA = .7

PEAK JET MIX LEVEL= 149. DB AT 103. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 130. DB AT 1200. HZ
STE= 105. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 89. DB AT 94. HZ
PEAK SEP LEVEL= 98. DB AT 4743. HZ
PEAK TBL LEVEL= 126. DB AT 2053. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	143.	110.	78.	73.	107.	142.7
31.	144.	111.	80.	74.	109.	143.9
40.	145.	113.	83.	76.	111.	145.4
50.	147.	114.	86.	78.	112.	146.7
63.	148.	115.	88.	79.	114.	147.9
80.	149.	117.	89.	81.	116.	148.6
100.	149.	118.	89.	83.	117.	148.9
125.	149.	119.	88.	84.	119.	148.7
160.	148.	121.	87.	86.	120.	148.2
200.	147.	122.	84.	88.	121.	147.1
250.	146.	123.	82.	89.	122.	145.8
315.	144.	125.	79.	91.	123.	144.5
400.	143.	126.	76.	92.	123.	143.2
500.	142.	127.	74.	93.	124.	142.0
630.	140.	129.	71.	94.	124.	140.8
800.	140.	130.	68.	95.	125.	140.7
1000.	140.	130.	66.	95.	125.	140.7
1250.	140.	130.	63.	96.	125.	140.4
1600.	139.	130.	60.	96.	126.	139.9
2000.	138.	129.	58.	97.	126.	139.1
2500.	137.	128.	55.	97.	126.	138.1
3150.	136.	127.	52.	97.	125.	136.8
4000.	134.	125.	50.	98.	125.	135.3
5000.	133.	124.	47.	98.	125.	133.7
OASPL	158.4	139.7	96.6	107.1	136.7	158.5

SECTION III

COMPUTER TABULATIONS FOR FIELD POINT NOISE LEVELS AT STOL OPERATION DUE TO OUTBOARD ENGINES

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PROGRAM USBEST-VERSION 06/MAY/78
UPDATED MARCH,1979..L.BUTZEL
GENERATES SPL ESTIMATE OF EXTERIOR
FUSELAGE/FLAP,WING FLUCTUATING
PRESSURE LEVELS FOR USB AIRCRAFT

AUTHORS=L.BUTZEL,W.LUNDT
USER DOCUMENTATION=D6-XXXXX
RUN DATE= 79/03/22.

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A/P GEOMETRY CHANGES ARE

PARAM	NEW	OLD
THUKD	20.0	-.1
THDKU	0.0	-.1
THOKI	12.0	-.1
THIKO	0.0	-.1
THTB	0.0	-.1
THSK	-12.0	-.1
THW	19.0	-.1
AEFF	770.0	-.1
ADOOR	0.0	-.1
AVG	5.0	-.1
NVG	12.0	-1.0
W	54.0	-.1
LW	51.0	-.1
RF	26.0	-.1
X0	182.0	-.1
Y0	374.0	-.1
Z0	208.0	-.1
Z1	201.0	-.1
LT	25.0	-.1
YR	0.0	-.1
LFAN	150.0	-.1
XBBL	57.0	-.1

CASE 1;B01;ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	460.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 86.4 DELTA = 86.8

PEAK JET MIX LEVEL= 116. DB AT 482. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 97. DB AT 938. HZ
STE= 93. ;DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 76. DB AT 127. HZ
PEAK SEP LEVEL= 85. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 115. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	109.	78.	61.	84.	88.	109.5
31.	110.	79.	63.	85.	88.	110.1
40.	111.	81.	66.	84.	89.	110.9
50.	111.	82.	69.	84.	89.	111.5
63.	112.	83.	72.	84.	90.	112.2
80.	113.	85.	74.	83.	90.	112.9
100.	113.	86.	75.	83.	90.	113.5
125.	114.	87.	76.	82.	90.	114.2
160.	115.	89.	75.	82.	90.	114.9
200.	116.	90.	74.	81.	89.	115.5
250.	116.	91.	72.	81.	89.	116.2
315.	117.	92.	69.	80.	89.	116.6
400.	116.	94.	66.	79.	88.	116.5
500.	116.	95.	64.	79.	88.	116.1
630.	117.	96.	61.	78.	87.	117.1
800.	118.	97.	58.	77.	87.	117.6
1000.	117.	97.	56.	76.	86.	117.4
1250.	117.	96.	53.	76.	85.	116.8
1600.	116.	96.	50.	75.	85.	115.9
2000.	115.	94.	48.	74.	84.	114.8
2500.	113.	93.	45.	73.	83.	113.5
3150.	112.	92.	43.	72.	82.	111.9
4000.	110.	90.	40.	71.	81.	110.0
5000.	108.	89.	37.	71.	81.	107.9
OASPL	128.4	106.2	83.5	94.6	101.5	128.5

CASE 2,B02,BKRL (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	460.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 102.7 DELTA = 87.8

PEAK JET MIX LEVEL= 116. DB AT 445. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 95. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 60. DB AT 127. HZ
PEAK SEP LEVEL= 84. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 115. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	109.	76.	45.	84.	88.	109.2
31.	110.	78.	48.	84.	88.	109.8
40.	111.	79.	50.	84.	89.	110.6
50.	111.	80.	53.	84.	89.	111.2
63.	112.	82.	56.	83.	90.	111.9
80.	113.	83.	58.	83.	90.	112.6
100.	113.	84.	59.	82.	90.	113.2
125.	114.	86.	60.	82.	90.	113.9
160.	115.	87.	59.	81.	90.	114.6
200.	115.	88.	58.	81.	89.	115.2
250.	116.	90.	56.	80.	89.	115.8
315.	116.	91.	53.	80.	89.	116.1
400.	116.	92.	50.	79.	88.	115.8
500.	115.	94.	48.	78.	88.	115.5
630.	116.	95.	45.	77.	87.	116.3
800.	117.	95.	42.	77.	87.	116.7
1000.	116.	95.	40.	76.	86.	116.4
1250.	116.	95.	37.	75.	85.	115.8
1600.	115.	94.	34.	74.	85.	114.9
2000.	114.	93.	32.	73.	84.	113.8
2500.	112.	92.	29.	72.	83.	112.5
3150.	111.	90.	27.	72.	82.	110.9
4000.	109.	89.	24.	71.	81.	109.0
5000.	107.	88.	21.	70.	81.	106.9
OASPL	127.8	104.8	67.5	94.1	101.5	127.8

CASE 3,B03,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	460.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 119.1 DELTA = 95.7

PEAK JET MIX LEVEL= 113. DB AT 428. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 93. DB AT 938. HZ
STE= 93. ;DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 79. DB AT 127. HZ
PEAK SEP LEVEL= 80. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 115. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	107.	74.	64.	80.	88.	107.2
31.	108.	76.	67.	80.	88.	107.8
40.	109.	77.	70.	80.	89.	108.6
50.	109.	78.	72.	79.	89.	109.2
63.	110.	80.	75.	79.	90.	109.9
80.	111.	81.	78.	79.	90.	110.6
100.	111.	82.	79.	78.	90.	111.3
125.	112.	84.	79.	78.	90.	111.9
160.	113.	85.	79.	77.	90.	112.6
200.	113.	86.	78.	77.	89.	113.3
250.	114.	88.	75.	76.	89.	113.8
315.	114.	89.	73.	76.	89.	114.0
400.	114.	91.	70.	75.	88.	113.6
500.	113.	92.	67.	74.	88.	113.4
630.	114.	93.	65.	73.	87.	114.1
800.	114.	93.	62.	73.	87.	114.4
1000.	114.	93.	59.	72.	86.	114.1
1250.	113.	93.	57.	71.	85.	113.5
1600.	113.	92.	54.	70.	85.	112.6
2000.	111.	91.	51.	69.	84.	111.5
2500.	110.	90.	49.	68.	83.	110.2
3150.	109.	88.	46.	68.	82.	108.6
4000.	107.	87.	43.	67.	81.	106.6
5000.	105.	86.	41.	66.	81.	104.6
OASPL	125.6	102.9	86.8	90.0	101.5	125.7

CASE 4,B04,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RO = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	500.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 120.0 DELTA = 91.7

PEAK JET MIX LEVEL= 114. DB AT 418. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 94. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 86. DB AT 127. HZ
PEAK SEP LEVEL= 81. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 108. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	108.	75.	71.	81.	88.	107.6
31.	108.	76.	74.	81.	88.	108.2
40.	109.	77.	76.	81.	89.	109.0
50.	110.	79.	79.	81.	89.	109.6
63.	110.	80.	82.	80.	90.	110.3
80.	111.	81.	84.	80.	90.	111.0
100.	112.	83.	85.	79.	90.	111.6
125.	112.	84.	86.	79.	90.	112.3
160.	113.	86.	85.	78.	90.	113.0
200.	114.	87.	84.	78.	89.	113.6
250.	114.	88.	82.	77.	89.	114.2
315.	114.	89.	79.	77.	88.	114.3
400.	114.	91.	77.	76.	88.	113.9
500.	114.	92.	74.	75.	87.	113.6
630.	114.	93.	71.	75.	87.	114.4
800.	114.	94.	68.	74.	86.	114.5
1000.	114.	94.	66.	73.	86.	114.2
1250.	114.	93.	63.	72.	85.	113.6
1600.	113.	93.	60.	71.	84.	112.7
2000.	112.	91.	58.	70.	84.	111.6
2500.	110.	90.	55.	70.	83.	110.3
3150.	109.	89.	53.	69.	82.	108.7
4000.	107.	87.	50.	68.	81.	106.8
5000.	105.	86.	47.	67.	80.	104.8
OASPL	125.9	103.2	93.5	91.2	101.5	125.9

CASE 5,B05,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RO = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	500.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 136.3 DELTA = 86.5

PEAK JET MIX LEVEL= 113. DB AT 377. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 93. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 92. DB AT 127. HZ
PEAK SEP LEVEL= 80. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 108. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	107.	74.	67.	80.	88.	107.0
31.	108.	75.	70.	80.	88.	107.7
40.	108.	77.	73.	80.	89.	108.4
50.	109.	78.	75.	80.	89.	109.1
63.	110.	80.	78.	79.	90.	109.7
80.	110.	81.	80.	79.	90.	110.4
100.	111.	82.	81.	78.	90.	111.1
125.	112.	84.	82.	78.	90.	111.7
160.	112.	85.	81.	77.	90.	112.4
200.	113.	86.	80.	77.	89.	113.1
250.	113.	88.	78.	76.	89.	113.4
315.	113.	89.	75.	76.	88.	113.3
400.	113.	90.	73.	75.	88.	112.9
500.	113.	92.	70.	74.	87.	112.6
630.	113.	93.	67.	74.	87.	113.1
800.	113.	93.	65.	73.	86.	113.1
1000.	113.	93.	62.	72.	86.	112.8
1250.	112.	93.	59.	71.	85.	112.2
1600.	111.	92.	57.	70.	84.	111.3
2000.	110.	91.	54.	69.	84.	110.2
2500.	109.	90.	51.	69.	83.	108.9
3150.	107.	88.	49.	68.	82.	107.3
4000.	105.	87.	46.	67.	81.	105.4
5000.	103.	86.	43.	66.	80.	103.3
OASPL	124.9	102.7	89.6	90.2	101.5	124.9

CASE 6,B06,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	500.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 152.6 DELTA = 88.5

PEAK JET MIX LEVEL= 111. DB AT 356. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 92. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 39. DB AT 127. HZ
PEAK SEP LEVEL= 77. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 108. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	106.	73.	24.	77.	88.	105.7
31.	106.	74.	27.	77.	88.	106.3
40.	107.	76.	30.	77.	89.	107.0
50.	108.	77.	32.	76.	89.	107.7
63.	108.	78.	35.	76.	90.	108.4
80.	109.	80.	38.	75.	90.	109.1
100.	110.	81.	39.	75.	90.	109.7
125.	110.	82.	39.	74.	90.	110.3
160.	111.	84.	39.	74.	90.	111.1
200.	112.	85.	38.	73.	89.	111.6
250.	112.	86.	35.	73.	89.	111.9
315.	112.	88.	33.	72.	88.	111.6
400.	111.	89.	30.	72.	88.	111.3
500.	111.	90.	27.	71.	87.	110.9
630.	111.	91.	25.	70.	87.	111.3
800.	111.	92.	22.	69.	86.	111.3
1000.	111.	92.	19.	68.	86.	110.9
1250.	110.	92.	17.	68.	85.	110.3
1600.	109.	91.	14.	67.	84.	109.4
2000.	108.	90.	11.	66.	84.	108.3
2500.	107.	88.	9.	65.	83.	107.0
3150.	105.	87.	6.	64.	82.	105.4
4000.	103.	86.	3.	63.	81.	103.5
5000.	101.	84.	1.	63.	80.	101.5
OASPL	123.3	101.6	46.9	86.7	101.5	123.3

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CASE 7,B07,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	550.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 161.9 DELTA = 104.0

PEAK JET MIX LEVEL= 109. DB AT 370. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 90. DB AT 938. HZ
STE= 93. ;DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 90. DB AT 127. HZ
PEAK SEP LEVEL= 72. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 100. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	103.	71.	76.	72.	88.	103.4
31.	104.	72.	78.	72.	89.	104.1
40.	105.	74.	81.	72.	89.	104.8
50.	105.	75.	84.	72.	89.	105.5
63.	106.	77.	86.	71.	90.	106.2
80.	107.	78.	89.	71.	90.	106.9
100.	107.	79.	90.	70.	90.	107.5
125.	108.	81.	90.	70.	90.	108.2
160.	109.	82.	90.	69.	90.	108.8
200.	109.	83.	89.	69.	89.	109.4
250.	110.	85.	87.	68.	89.	109.8
315.	110.	86.	84.	68.	88.	109.6
400.	109.	87.	81.	67.	88.	109.2
500.	109.	89.	79.	66.	87.	108.9
630.	109.	90.	76.	65.	87.	109.3
800.	109.	90.	73.	65.	86.	109.3
1000.	109.	90.	71.	64.	86.	109.0
1250.	108.	90.	68.	63.	85.	108.4
1600.	107.	89.	65.	62.	84.	107.5
2000.	106.	88.	63.	61.	83.	106.4
2500.	105.	87.	60.	61.	83.	105.1
3150.	103.	85.	57.	60.	82.	103.5
4000.	101.	84.	55.	59.	81.	101.6
5000.	99.	83.	52.	58.	80.	99.6
OASPL	121.1	99.7	98.2	82.1	101.4	121.2

CASE 8,B08,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	550.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 178.2 DELTA = 92.4

PEAK JET MIX LEVEL= 109. DB AT 329. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 90. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 88. DB AT 127. HZ
PEAK SEP LEVEL= 71. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 100. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	104.	71.	73.	71.	88.	103.8
31.	104.	73.	75.	71.	89.	104.4
40.	105.	74.	78.	71.	89.	105.2
50.	106.	75.	81.	71.	89.	105.8
63.	106.	77.	84.	70.	90.	106.5
80.	107.	78.	86.	70.	90.	107.2
100.	108.	80.	87.	70.	90.	107.8
125.	108.	81.	88.	69.	90.	108.5
160.	109.	82.	87.	69.	90.	109.2
200.	110.	84.	86.	68.	89.	109.7
250.	110.	85.	84.	68.	89.	109.7
315.	109.	86.	81.	67.	88.	109.3
400.	109.	88.	78.	66.	88.	109.1
500.	109.	89.	76.	66.	87.	108.6
630.	109.	90.	73.	65.	87.	108.7
800.	109.	90.	70.	64.	86.	108.7
1000.	108.	90.	68.	63.	86.	108.3
1250.	108.	90.	65.	62.	85.	107.8
1600.	107.	89.	62.	61.	84.	106.8
2000.	106.	88.	60.	61.	83.	105.8
2500.	104.	87.	57.	60.	83.	104.4
3150.	103.	85.	55.	59.	82.	102.8
4000.	101.	84.	52.	58.	81.	100.9
5000.	99.	83.	49.	57.	80.	98.9
OASPL	121.0	99.9	95.5	81.3	101.4	121.1

CASE 9;B09;ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	550.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 194.6 DELTA = 86.7

PEAK JET MIX LEVEL= 109. DB AT 301. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 90. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 82. DB AT 127. HZ
PEAK SEP LEVEL= 69. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 100. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	104.	71.	67.	69.	88.	104.1
31.	105.	73.	70.	69.	89.	104.7
40.	105.	74.	73.	69.	89.	105.4
50.	106.	75.	75.	69.	89.	106.1
63.	107.	77.	78.	68.	90.	106.7
80.	107.	78.	81.	68.	90.	107.4
100.	108.	79.	82.	67.	90.	108.1
125.	109.	81.	82.	67.	90.	108.7
160.	109.	82.	82.	66.	90.	109.4
200.	110.	83.	81.	66.	89.	109.8
250.	110.	85.	78.	65.	89.	109.7
315.	109.	86.	76.	65.	88.	109.2
400.	109.	87.	73.	64.	88.	109.0
500.	108.	89.	70.	63.	87.	108.3
630.	108.	90.	68.	63.	87.	108.3
800.	108.	90.	65.	62.	86.	108.2
1000.	108.	90.	62.	61.	86.	107.9
1250.	107.	90.	60.	60.	85.	107.3
1600.	106.	89.	57.	59.	84.	106.4
2000.	105.	88.	54.	58.	83.	105.3
2500.	104.	87.	52.	58.	83.	104.0
3150.	102.	85.	49.	57.	82.	102.4
4000.	100.	84.	46.	56.	81.	100.5
5000.	98.	83.	44.	55.	80.	98.4
OASPL	120.9	99.7	89.8	79.2	101.4	121.0

CASE 13,W01,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	375.	212.	90.	

FIELD POINT IN ZONE 1 AND IS
INBOARD OF FLOW RIBBON
S= 1.0 DELTA = 63.4

PEAK JET MIX LEVEL= 104. DB AT 775. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 118. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 57. DB AT 127. HZ
PEAK SEP LEVEL= 82. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 136. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	96.	99.	42.	82.	87.	101.0
31.	96.	100.	45.	82.	88.	102.1
40.	97.	102.	47.	82.	88.	103.3
50.	98.	103.	50.	81.	89.	104.4
63.	99.	104.	53.	81.	89.	105.6
80.	99.	106.	55.	81.	90.	106.8
100.	100.	107.	56.	80.	90.	108.0
125.	101.	108.	57.	80.	90.	109.1
160.	101.	110.	56.	79.	90.	110.5
200.	102.	111.	55.	79.	90.	111.7
250.	103.	112.	53.	78.	89.	112.9
315.	103.	114.	50.	77.	89.	114.2
400.	104.	115.	47.	77.	88.	115.5
500.	104.	116.	45.	76.	88.	116.7
630.	106.	117.	42.	75.	87.	117.7
800.	106.	118.	39.	74.	87.	118.2
1000.	107.	118.	37.	74.	86.	118.4
1250.	107.	118.	34.	73.	86.	118.1
1600.	106.	117.	31.	72.	85.	117.3
2000.	105.	116.	29.	71.	84.	116.1
2500.	104.	114.	26.	70.	84.	114.8
3150.	102.	113.	24.	69.	83.	113.4
4000.	100.	112.	21.	69.	82.	112.0
5000.	98.	110.	18.	68.	81.	110.7
OASPL	117.0	127.5	64.5	91.9	101.6	127.9

CASE T4,W02,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	395.	206.	90.	

FIELD POINT IN ZONE 1 AND IS
INBOARD OF FLOW RIBBON
S= 21.0 DELTA = 58.7

PEAK JET MIX LEVEL= 110. DB AT 611. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 110. DB AT 938. HZ
STE= 93. ;DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 75. DB AT 127. HZ
PEAK SEP LEVEL= 88. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 130. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	102.	91.	61.	87.	87.	102.8
31.	103.	92.	63.	88.	88.	103.5
40.	104.	94.	66.	87.	89.	104.3
50.	104.	95.	69.	87.	89.	105.0
63.	105.	96.	71.	87.	89.	105.7
80.	106.	98.	74.	86.	90.	106.5
100.	106.	99.	75.	86.	90.	107.2
125.	107.	100.	75.	85.	90.	107.9
160.	108.	102.	75.	85.	90.	108.8
200.	108.	103.	74.	84.	90.	109.5
250.	109.	104.	71.	84.	89.	110.3
315.	110.	106.	69.	83.	89.	111.2
400.	110.	107.	66.	82.	88.	111.9
500.	110.	108.	63.	82.	88.	112.3
630.	111.	109.	61.	81.	87.	113.2
800.	112.	110.	58.	80.	87.	114.0
1000.	112.	110.	55.	79.	86.	114.2
1250.	112.	110.	53.	79.	86.	113.8
1600.	111.	109.	50.	78.	85.	112.9
2000.	110.	108.	47.	77.	84.	111.8
2500.	108.	106.	45.	76.	84.	110.5
3150.	107.	105.	42.	75.	83.	109.0
4000.	105.	104.	39.	74.	82.	107.3
5000.	103.	102.	37.	74.	81.	105.6
OASPL	122.4	119.4	83.1	97.6	101.6	124.2

CASE 15,F01,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	432.	199.	60.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 58.0 DELTA = 83.3

PEAK JET MIX LEVEL= 115. DB AT 561. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 100. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 80. DB AT 127. HZ
PEAK SEP LEVEL= 84. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 121. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	108.	81.	65.	84.	88.	107.7
31.	108.	82.	68.	84.	88.	108.3
40.	109.	84.	71.	84.	89.	109.1
50.	110.	85.	73.	84.	89.	109.7
63.	110.	87.	76.	84.	89.	110.4
80.	111.	88.	79.	83.	90.	111.1
100.	112.	89.	80.	83.	90.	111.7
125.	112.	91.	80.	82.	90.	112.4
160.	113.	92.	80.	82.	90.	113.1
200.	114.	93.	79.	81.	89.	113.8
250.	114.	95.	76.	81.	89.	114.4
315.	115.	96.	74.	80.	89.	115.0
400.	115.	97.	71.	79.	88.	115.3
500.	115.	98.	68.	79.	88.	115.1
630.	116.	100.	66.	78.	87.	116.0
800.	117.	100.	63.	77.	87.	116.8
1000.	117.	100.	60.	76.	86.	116.9
1250.	116.	100.	58.	75.	85.	116.4
1600.	115.	99.	55.	74.	85.	115.5
2000.	114.	98.	52.	74.	84.	114.4
2500.	113.	97.	50.	73.	83.	113.1
3150.	111.	95.	47.	72.	82.	111.5
4000.	109.	94.	44.	71.	82.	109.5
5000.	107.	92.	42.	70.	81.	107.5
OASPL	127.3	109.6	88.0	94.4	101.5	127.4

CASE 16,F02,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	432.	199.	90.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 58.0 DELTA = 53.3

PEAK JET MIX LEVEL= 119. DB AT 425. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 104. DB AT 938. HZ
STE= 93. ;DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 85. DB AT 127. HZ
PEAK SEP LEVEL= 101. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 121. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	112.	85.	70.	101.	88.	112.2
31.	112.	86.	73.	101.	88.	112.8
40.	113.	88.	76.	101.	89.	113.5
50.	114.	89.	78.	101.	89.	114.2
63.	115.	90.	81.	100.	89.	114.8
80.	115.	92.	84.	100.	90.	115.5
100.	116.	93.	85.	99.	90.	116.2
125.	117.	94.	85.	99.	90.	116.9
160.	118.	96.	85.	98.	90.	117.6
200.	118.	97.	84.	98.	89.	118.3
250.	119.	98.	81.	97.	89.	118.9
315.	119.	100.	79.	97.	89.	119.1
400.	119.	101.	76.	96.	88.	118.9
500.	118.	102.	73.	95.	88.	118.6
630.	119.	103.	71.	95.	87.	119.4
800.	120.	104.	68.	94.	87.	119.7
1000.	119.	104.	65.	93.	86.	119.4
1250.	119.	104.	63.	92.	85.	118.8
1600.	118.	103.	60.	91.	85.	117.9
2000.	117.	102.	57.	90.	84.	116.8
2500.	115.	100.	55.	90.	83.	115.5
3150.	114.	99.	52.	89.	82.	113.9
4000.	112.	98.	49.	88.	82.	112.0
5000.	110.	96.	47.	87.	81.	110.0
OASPL	130.7	113.5	92.9	111.2	101.5	130.8

CASE 17,F03,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	432.	199.	130.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 58.0 DELTA = 13.4

PEAK JET MIX LEVEL= 132. DB AT 156. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 117. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 93. DB AT 127. HZ
PEAK SEP LEVEL= 113. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 121. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	124.	98.	78.	113.	88.	124.0
31.	125.	99.	81.	113.	88.	125.1
40.	126.	101.	84.	113.	89.	126.4
50.	127.	102.	86.	112.	89.	127.6
63.	129.	103.	89.	112.	89.	128.8
80.	130.	105.	92.	112.	90.	130.1
100.	131.	106.	93.	111.	90.	131.1
125.	132.	107.	93.	111.	90.	131.6
160.	132.	109.	93.	110.	90.	131.7
200.	131.	110.	92.	110.	89.	131.4
250.	131.	111.	89.	109.	89.	130.8
315.	130.	113.	87.	108.	89.	129.7
400.	128.	114.	84.	108.	88.	128.4
500.	127.	115.	81.	107.	88.	127.2
630.	127.	116.	79.	106.	87.	127.2
800.	127.	117.	76.	105.	87.	127.1
1000.	126.	117.	73.	105.	86.	126.8
1250.	126.	117.	71.	104.	85.	126.3
1600.	125.	116.	68.	103.	85.	125.4
2000.	124.	115.	65.	102.	84.	124.3
2500.	122.	113.	63.	101.	83.	123.0
3150.	121.	112.	60.	100.	82.	121.4
4000.	119.	111.	57.	100.	82.	119.6
5000.	117.	109.	55.	99.	81.	117.6

OASPL 141.7 126.5 101.0 122.9 101.5 141.9

CASE 10,F04,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	445.	177.	60.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 80.9 DELTA = 83.9

PEAK JET MIX LEVEL= 116. DB AT 489. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 98. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 70. DB AT 127. HZ
PEAK SEP LEVEL= 87. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 118. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	109.	79.	55.	87.	88.	109.4
31.	110.	80.	57.	87.	88.	110.0
40.	111.	81.	60.	87.	89.	110.8
50.	111.	83.	63.	87.	89.	111.4
63.	112.	84.	66.	86.	89.	112.1
80.	113.	85.	68.	86.	90.	112.8
100.	113.	87.	69.	85.	90.	113.4
125.	114.	88.	70.	85.	90.	114.1
160.	115.	89.	69.	84.	90.	114.8
200.	115.	91.	68.	84.	89.	115.5
250.	116.	92.	66.	83.	89.	116.1
315.	117.	93.	63.	83.	89.	116.6
400.	116.	95.	60.	82.	88.	116.5
500.	116.	96.	58.	81.	88.	116.1
630.	117.	97.	55.	81.	87.	117.1
800.	118.	97.	52.	80.	87.	117.6
1000.	117.	98.	50.	79.	86.	117.4
1250.	117.	97.	47.	78.	85.	116.9
1600.	116.	96.	44.	77.	85.	115.9
2000.	115.	95.	42.	76.	84.	114.9
2500.	113.	94.	39.	76.	83.	113.5
3150.	112.	93.	36.	75.	82.	111.9
4000.	110.	91.	34.	74.	81.	110.0
5000.	108.	90.	31.	73.	81.	108.0
OASPL	128.4	107.0	77.4	97.1	101.5	128.5

CASE 11,F05,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RO = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	445.	177.	90.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 80.9 DELTA = 54.3

PEAK JET MIX LEVEL= 120. DB AT 383. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 101. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 75. DB AT 127. HZ
PEAK SEP LEVEL= 109. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 118. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	114.	82.	60.	108.	88.	114.7
31.	114.	84.	63.	109.	88.	115.2
40.	115.	85.	66.	108.	89.	115.8
50.	116.	86.	68.	108.	89.	116.3
63.	116.	88.	71.	108.	89.	116.9
80.	117.	89.	74.	107.	90.	117.5
100.	118.	90.	75.	107.	90.	118.1
125.	118.	92.	75.	106.	90.	118.7
160.	119.	93.	75.	106.	90.	119.4
200.	120.	94.	74.	105.	89.	120.0
250.	120.	96.	71.	105.	89.	120.4
315.	120.	97.	69.	104.	89.	120.3
400.	120.	98.	66.	103.	88.	119.9
500.	120.	100.	63.	103.	88.	119.7
630.	120.	101.	61.	102.	87.	120.2
800.	120.	101.	58.	101.	87.	120.2
1000.	120.	101.	55.	100.	86.	119.9
1250.	119.	101.	53.	99.	85.	119.3
1600.	118.	100.	50.	99.	85.	118.4
2000.	117.	99.	47.	98.	84.	117.3
2500.	116.	98.	45.	97.	83.	116.0
3150.	114.	96.	42.	96.	82.	114.4
4000.	112.	95.	39.	95.	81.	112.5
5000.	110.	94.	37.	94.	81.	110.5
OASPL	131.8	110.8	82.9	118.5	101.5	132.0

CASE 12;F06,ST50 (STOL FLAPS=50)

ALT= 6500. FT USB =50. DEG R/RD = .848
VA = 110. FT/S DOOR= CLOSED THETAS=-5. DEG
VJ = 680. FT/S VGS = UP THETAP=33. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	143.	211.
AT TR OFF	431.	198.	143.	211.
AT TR EDG	460.	179.	143.	211.
TRAIL EDGE	450.	162.	143.	211.
FIELD POINT	445.	177.	130.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 80.9 DELTA = 16.7

PEAK JET MIX LEVEL= 130. DB AT 135. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2190. HZ
PEAK NEAR NOZ LEVEL= 112. DB AT 938. HZ
STE= 93. ,DELTATE= 20.
PEAK TRAIL EDGE LEVEL= 85. DB AT 127. HZ
PEAK SEP LEVEL= 135. DB AT 33. HZ
PEAK TBL LEVEL= 90. DB AT 118. HZ

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	123.	93.	71.	135.	88.	134.9
31.	124.	94.	73.	135.	88.	135.3
40.	126.	95.	76.	135.	89.	135.2
50.	127.	97.	79.	134.	89.	135.1
63.	128.	98.	81.	134.	89.	135.0
80.	129.	99.	84.	134.	90.	134.9
100.	130.	101.	85.	133.	90.	134.8
125.	130.	102.	85.	133.	90.	134.5
160.	130.	103.	85.	132.	90.	134.1
200.	129.	105.	84.	132.	89.	133.7
250.	128.	106.	81.	131.	89.	133.0
315.	127.	107.	79.	130.	89.	132.1
400.	126.	109.	76.	130.	88.	131.2
500.	125.	110.	73.	129.	88.	130.4
630.	124.	111.	71.	128.	87.	129.8
800.	124.	112.	68.	127.	87.	129.2
1000.	124.	112.	65.	127.	86.	128.6
1250.	123.	111.	63.	126.	85.	127.9
1600.	122.	110.	60.	125.	85.	127.0
2000.	121.	109.	57.	124.	84.	126.1
2500.	120.	108.	55.	123.	83.	125.1
3150.	118.	107.	52.	122.	82.	124.0
4000.	117.	105.	49.	122.	81.	122.9
5000.	114.	104.	47.	121.	81.	121.8
OASPL	140.0	121.1	93.0	144.9	101.5	146.1

SECTION IV
COMPUTER TABULATIONS FOR FIELD POINT NOISE LEVELS AT BRAKE RELEASE DUE TO OUTBOARD ENGINES

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PROGRAM USBEST-VERSION 06/MAY/78
UPDATED MARCH,1979..L.BUTZEL
GENERATES SPL ESTIMATE OF EXTERIOR
FUSELAGE/FLAP,WING FLUCTUATING
PRESSURE LEVELS FOR USB AIRCRAFT

AUTHORS=L.BUTZEL,W.LUNDT
USER DOCUMENTATION=D6-XXXXX
RUN DATE= 79/03/22.

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A/P GEOMETRY CHANGES ARE

PARAM	NEW	OLD
THUKD	20.0	-.1
THDKU	0.0	-.1
THDKI	12.0	-.1
THIKD	0.0	-.1
THTB	0.0	-.1
THSK	-12.0	-.1
THW	19.0	-.1
AEFF	770.0	-.1
ADOOR	0.0	-.1
AVG	5.0	-.1
NVG	12.0	-1.0
W	54.0	-.1
LW	51.0	-.1
RF	26.0	-.1
X0	182.0	-.1
Y0	374.0	-.1
Z0	208.0	-.1
Z1	201.0	-.1
LT	25.0	-.1
YR	0.0	-.1
LFAN	150.0	-.1
XBBL	57.0	-.1

CASE 1,B01,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	460.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 87.7 DELTA = 84.4

PEAK JET MIX LEVEL= 123. DB AT 375. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 105. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 68. DB AT 111. HZ
PEAK SEP LEVEL= 41. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	117.	84.	55.	16.	0.	117.3
31.	118.	86.	57.	17.	0.	118.0
40.	119.	87.	60.	19.	0.	118.7
50.	119.	88.	63.	21.	0.	119.4
63.	120.	90.	65.	22.	0.	120.0
80.	121.	91.	67.	24.	0.	120.7
100.	121.	92.	68.	26.	0.	121.4
125.	122.	94.	68.	27.	0.	122.0
160.	123.	95.	67.	29.	0.	122.8
200.	123.	96.	65.	31.	0.	123.4
250.	124.	98.	62.	32.	0.	123.8
315.	124.	99.	60.	34.	0.	123.6
400.	123.	100.	57.	35.	0.	123.2
500.	123.	102.	54.	36.	0.	122.9
630.	122.	103.	52.	37.	0.	122.2
800.	122.	104.	49.	37.	0.	122.1
1000.	122.	105.	46.	38.	0.	122.1
1250.	122.	105.	44.	39.	0.	121.7
1600.	121.	104.	41.	39.	0.	121.1
2000.	120.	104.	38.	40.	0.	120.3
2500.	119.	103.	36.	40.	0.	119.3
3150.	118.	101.	33.	40.	0.	117.9
4000.	116.	100.	30.	40.	0.	116.3
5000.	114.	99.	28.	41.	0.	114.5
OASPL	135.0	114.1	75.5	49.9	0.0	135.0

CASE 2,B02,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	460.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 97.2 DELTA = 88.9

PEAK JET MIX LEVEL= 122. DB AT 366. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 104. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 100. DB AT 111. HZ
PEAK SEP LEVEL= 39. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	116.	83.	86.	14.	0.	116.4
31.	117.	84.	89.	15.	0.	117.1
40.	118.	86.	92.	17.	0.	117.8
50.	118.	87.	94.	19.	0.	118.5
63.	119.	88.	97.	21.	0.	119.1
80.	120.	90.	99.	22.	0.	119.9
100.	120.	91.	99.	24.	0.	120.5
125.	121.	92.	99.	26.	0.	121.2
160.	122.	94.	98.	27.	0.	121.9
200.	122.	95.	97.	29.	0.	122.5
250.	123.	96.	94.	31.	0.	122.8
315.	123.	98.	91.	32.	0.	122.6
400.	122.	99.	89.	33.	0.	122.2
500.	122.	100.	86.	34.	0.	121.9
630.	121.	102.	83.	35.	0.	121.1
800.	121.	103.	81.	36.	0.	121.0
1000.	121.	103.	78.	36.	0.	120.9
1250.	121.	104.	75.	37.	0.	120.6
1600.	120.	103.	73.	37.	0.	120.0
2000.	119.	102.	70.	38.	0.	119.2
2500.	118.	101.	67.	38.	0.	118.1
3150.	117.	100.	65.	38.	0.	116.8
4000.	115.	99.	62.	39.	0.	115.1
5000.	113.	97.	59.	39.	0.	113.4
OASPL	134.0	112.9	107.2	48.1	0.0	134.0

CASE 3,B03,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	460.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 106.8 DELTA = 101.4

PEAK JET MIX LEVEL= 121. DB AT 371. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 102. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 106. DB AT 111. HZ
PEAK SEP LEVEL= 35. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	115.	81.	93.	10.	0.	114.7
31.	115.	82.	95.	12.	0.	115.4
40.	116.	84.	98.	13.	0.	116.1
50.	117.	85.	101.	15.	0.	116.8
63.	117.	87.	103.	17.	0.	117.6
80.	118.	88.	105.	18.	0.	118.3
100.	119.	89.	106.	20.	0.	119.0
125.	119.	91.	106.	22.	0.	119.6
160.	120.	92.	105.	23.	0.	120.3
200.	121.	93.	103.	25.	0.	120.8
250.	121.	95.	101.	27.	0.	121.1
315.	121.	96.	98.	28.	0.	120.9
400.	121.	97.	95.	29.	0.	120.5
500.	120.	99.	93.	30.	0.	120.2
630.	119.	100.	90.	31.	0.	119.5
800.	119.	101.	87.	32.	0.	119.4
1000.	119.	101.	85.	32.	0.	119.3
1250.	119.	102.	82.	33.	0.	119.0
1600.	118.	101.	79.	33.	0.	118.4
2000.	117.	101.	77.	34.	0.	117.6
2500.	116.	99.	74.	34.	0.	116.5
3150.	115.	98.	71.	34.	0.	115.2
4000.	113.	97.	69.	35.	0.	113.5
5000.	112.	95.	66.	35.	0.	111.7
OASPL	132.3	111.0	113.8	44.3	0.0	132.4

CASE 4,B04,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	500.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 125.6 DELTA = 85.5

PEAK JET MIX LEVEL= 121. DB AT 313. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 102. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 96. DB AT 111. HZ
PEAK SEP LEVEL= 37. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	116.	81.	83.	12.	0.	115.6
31.	116.	83.	85.	13.	0.	116.2
40.	117.	84.	88.	15.	0.	117.0
50.	118.	85.	91.	17.	0.	117.6
63.	118.	87.	93.	18.	0.	118.3
80.	119.	88.	95.	20.	0.	119.0
100.	120.	89.	96.	22.	0.	119.7
125.	120.	91.	96.	23.	0.	120.3
160.	121.	92.	95.	25.	0.	121.0
200.	122.	93.	93.	27.	0.	121.5
250.	121.	95.	91.	28.	0.	121.4
315.	121.	96.	88.	30.	0.	121.0
400.	121.	97.	85.	31.	0.	120.8
500.	120.	99.	83.	32.	0.	120.2
630.	119.	100.	80.	33.	0.	119.0
800.	119.	101.	77.	34.	0.	118.8
1000.	119.	102.	75.	34.	0.	118.7
1250.	118.	102.	72.	35.	0.	118.4
1600.	118.	101.	69.	35.	0.	117.8
2000.	117.	101.	67.	36.	0.	117.0
2500.	116.	100.	64.	36.	0.	115.9
3150.	115.	98.	61.	36.	0.	114.6
4000.	113.	97.	59.	37.	0.	113.0
5000.	111.	96.	56.	37.	0.	111.2
OASPL	132.5	111.2	103.8	46.1	0.0	132.6

CASE 5,B05,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	500.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 135.2 DELTA = 85.7

PEAK JET MIX LEVEL= 120. DB AT 300. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 101. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 97. DB AT 111. HZ
PEAK SEP LEVEL= 35. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	115.	81.	84.	10.	0.	115.2
31.	116.	82.	86.	12.	0.	115.8
40.	117.	84.	89.	14.	0.	116.5
50.	117.	85.	92.	15.	0.	117.2
63.	118.	86.	94.	17.	0.	117.9
80.	119.	88.	96.	19.	0.	118.6
100.	119.	89.	97.	20.	0.	119.2
125.	120.	90.	97.	22.	0.	119.9
160.	121.	92.	96.	24.	0.	120.6
200.	121.	93.	94.	25.	0.	120.9
250.	121.	94.	92.	27.	0.	120.8
315.	120.	95.	89.	29.	0.	120.4
400.	120.	97.	86.	30.	0.	120.1
500.	119.	98.	84.	31.	0.	119.4
630.	118.	99.	81.	32.	0.	118.2
800.	118.	101.	78.	32.	0.	118.0
1000.	118.	101.	75.	33.	0.	117.9
1250.	118.	101.	73.	33.	0.	117.6
1600.	117.	101.	70.	34.	0.	117.0
2000.	116.	100.	67.	34.	0.	116.2
2500.	115.	99.	65.	35.	0.	115.1
3150.	114.	98.	62.	35.	0.	113.8
4000.	112.	96.	59.	35.	0.	112.2
5000.	110.	95.	57.	35.	0.	110.4
OASPL	131.9	110.6	104.6	44.7	0.0	131.9

CASE 6,B06,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RD =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	500.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 144.7 DELTA = 94.9

PEAK JET MIX LEVEL= 119. DB AT 302. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 100. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 106. DB AT 111. HZ
PEAK SEP LEVEL= 32. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	114.	79.	93.	7.	0.	113.7
31.	114.	81.	95.	9.	0.	114.4
40.	115.	82.	98.	11.	0.	115.2
50.	116.	83.	101.	12.	0.	115.9
63.	116.	85.	103.	14.	0.	116.6
80.	117.	86.	105.	16.	0.	117.4
100.	118.	87.	106.	17.	0.	118.0
125.	118.	89.	106.	19.	0.	118.6
160.	119.	90.	105.	21.	0.	119.3
200.	120.	91.	103.	22.	0.	119.6
250.	119.	93.	100.	24.	0.	119.4
315.	119.	94.	98.	26.	0.	119.0
400.	119.	95.	95.	27.	0.	118.7
500.	118.	97.	92.	28.	0.	118.0
630.	117.	98.	90.	28.	0.	116.8
800.	117.	99.	87.	29.	0.	116.6
1000.	116.	100.	84.	30.	0.	116.6
1250.	116.	100.	82.	30.	0.	116.3
1600.	116.	99.	79.	31.	0.	115.6
2000.	115.	99.	76.	31.	0.	114.8
2500.	114.	98.	74.	32.	0.	113.8
3150.	112.	96.	71.	32.	0.	112.4
4000.	111.	95.	68.	32.	0.	110.8
5000.	109.	94.	66.	32.	0.	109.0
OASPL	130.5	109.1	113.4	41.6	0.0	130.6

CASE 7,B07,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	550.	190.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 173.0 DELTA = 89.4

PEAK JET MIX LEVEL= 118. DB AT 263. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 99. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 102. DB AT 111. HZ
PEAK SEP LEVEL= 29. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	113.	78.	89.	4.	0.	113.3
31.	114.	80.	91.	6.	0.	113.9
40.	115.	81.	94.	8.	0.	114.7
50.	115.	82.	97.	9.	0.	115.4
63.	116.	84.	99.	11.	0.	116.1
80.	117.	85.	101.	13.	0.	116.8
100.	117.	86.	102.	14.	0.	117.5
125.	118.	88.	102.	16.	0.	118.1
160.	119.	89.	101.	18.	0.	118.7
200.	119.	90.	99.	19.	0.	118.7
250.	118.	92.	97.	21.	0.	118.3
315.	118.	93.	94.	22.	0.	118.0
400.	117.	94.	91.	23.	0.	117.5
500.	116.	96.	89.	24.	0.	116.4
630.	115.	97.	86.	25.	0.	115.2
800.	115.	98.	83.	26.	0.	115.0
1000.	115.	99.	81.	27.	0.	114.9
1250.	114.	99.	78.	27.	0.	114.6
1600.	114.	99.	75.	28.	0.	114.0
2000.	113.	98.	73.	28.	0.	113.2
2500.	112.	97.	70.	28.	0.	112.1
3150.	111.	95.	67.	29.	0.	110.8
4000.	109.	94.	65.	29.	0.	109.1
5000.	107.	93.	62.	29.	0.	107.4
OASPL	129.5	108.2	109.8	38.5	0.0	129.6

CASE 8,B08,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	550.	160.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
3= 182.5 DELTA = 84.4

PEAK JET MIX LEVEL= 118. DB AT 247. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 99. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 74. DB AT 111. HZ
PEAK SEP LEVEL= 28. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	114.	78.	61.	3.	0.	113.7
31.	114.	80.	63.	5.	0.	114.3
40.	115.	81.	66.	7.	0.	115.0
50.	116.	83.	69.	8.	0.	115.7
63.	116.	84.	71.	10.	0.	116.4
80.	117.	85.	73.	12.	0.	117.1
100.	118.	87.	74.	14.	0.	117.7
125.	118.	88.	74.	15.	0.	118.4
160.	119.	89.	73.	17.	0.	118.9
200.	119.	91.	71.	19.	0.	118.8
250.	118.	92.	69.	20.	0.	118.3
315.	118.	93.	66.	22.	0.	118.1
400.	117.	95.	63.	23.	0.	117.4
500.	116.	96.	61.	24.	0.	116.3
630.	115.	97.	58.	25.	0.	115.0
800.	115.	98.	55.	25.	0.	114.8
1000.	115.	99.	53.	26.	0.	114.8
1250.	114.	99.	50.	27.	0.	114.4
1600.	114.	99.	47.	27.	0.	113.8
2000.	113.	98.	45.	27.	0.	113.0
2500.	112.	97.	42.	28.	0.	112.0
3150.	110.	95.	39.	28.	0.	110.6
4000.	109.	94.	37.	28.	0.	109.0
5000.	107.	93.	34.	28.	0.	107.2
OASPL	129.6	108.3	81.7	37.8	0.0	129.7

CASE 9,B09,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	550.	130.	57.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 192.1 DELTA = 88.8

PEAK JET MIX LEVEL= 118. DB AT 244. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 98. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 101. DB AT 111. HZ
PEAK SEP LEVEL= 27. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	113.	78.	87.	2.	0.	113.0
31.	114.	79.	90.	3.	0.	113.6
40.	114.	80.	93.	5.	0.	114.3
50.	115.	82.	95.	7.	0.	115.0
63.	116.	83.	98.	8.	0.	115.7
80.	116.	84.	100.	10.	0.	116.4
100.	117.	86.	100.	12.	0.	117.1
125.	118.	87.	100.	13.	0.	117.7
160.	118.	88.	100.	15.	0.	118.2
200.	118.	90.	98.	17.	0.	118.1
250.	118.	91.	95.	18.	0.	117.6
315.	117.	92.	93.	20.	0.	117.4
400.	117.	94.	90.	21.	0.	116.7
500.	115.	95.	87.	22.	0.	115.5
630.	114.	96.	85.	23.	0.	114.2
800.	114.	97.	82.	23.	0.	114.0
1000.	114.	98.	79.	24.	0.	114.0
1250.	114.	98.	77.	25.	0.	113.7
1600.	113.	98.	74.	25.	0.	113.0
2000.	112.	97.	71.	25.	0.	112.2
2500.	111.	96.	69.	26.	0.	111.2
3150.	110.	94.	66.	26.	0.	109.8
4000.	108.	93.	63.	26.	0.	108.2
5000.	106.	92.	61.	26.	0.	106.4
OASPL	128.9	107.4	108.3	35.9	0.0	129.0

CASE 13,W01,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	375.	212.	90.	

FIELD POINT IN ZONE 1 AND IS
INBOARD OF FLOW RIBBON
S= 1.0 DELTA = 62.9

PEAK JET MIX LEVEL= 113. DB AT 613. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 126. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 92. DB AT 111. HZ
PEAK SEP LEVEL= 45. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	105.	106.	79.	20.	0.	108.5
31.	106.	107.	81.	22.	0.	109.5
40.	107.	108.	84.	23.	0.	110.6
50.	107.	110.	87.	25.	0.	111.7
63.	108.	111.	90.	27.	0.	112.8
80.	109.	112.	91.	28.	0.	113.9
100.	109.	114.	92.	30.	0.	115.1
125.	110.	115.	92.	32.	0.	116.2
160.	111.	116.	91.	33.	0.	117.4
200.	111.	118.	89.	35.	0.	118.6
250.	112.	119.	87.	37.	0.	119.8
315.	113.	120.	84.	38.	0.	121.0
400.	113.	122.	81.	39.	0.	122.2
500.	113.	123.	79.	40.	0.	123.4
630.	113.	124.	76.	41.	0.	124.6
800.	114.	125.	73.	42.	0.	125.6
1000.	114.	126.	71.	43.	0.	126.1
1250.	114.	126.	68.	43.	0.	126.2
1600.	113.	126.	65.	44.	0.	125.9
2000.	113.	125.	63.	44.	0.	125.2
2500.	112.	124.	60.	44.	0.	124.0
3150.	110.	122.	57.	45.	0.	122.7
4000.	109.	121.	55.	45.	0.	121.3
5000.	107.	120.	52.	45.	0.	120.0
OASPL	125.1	135.4	99.8	54.3	0.0	135.8

CASE 14,W02,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	395.	206.	90.	

FIELD POINT IN ZONE 1 AND IS
INBOARD OF FLOW RIBBON
S= 21.0 DELTA = 57.5

PEAK JET MIX LEVEL= 119. DB AT 480. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 118. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 92. DB AT 111. HZ
PEAK SEP LEVEL= 50. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	112.	98.	79.	25.	0.	112.0
31.	112.	99.	81.	27.	0.	112.7
40.	113.	100.	84.	29.	0.	113.5
50.	114.	102.	87.	30.	0.	114.2
63.	115.	103.	89.	32.	0.	114.9
80.	115.	104.	91.	34.	0.	115.7
100.	116.	106.	92.	35.	0.	116.4
125.	117.	107.	92.	37.	0.	117.1
160.	117.	108.	91.	39.	0.	117.9
200.	118.	110.	89.	41.	0.	118.6
250.	119.	111.	86.	42.	0.	119.4
315.	119.	112.	84.	44.	0.	119.9
400.	119.	114.	81.	45.	0.	120.1
500.	119.	115.	78.	46.	0.	120.2
630.	118.	116.	76.	47.	0.	120.4
800.	119.	117.	73.	47.	0.	121.1
1000.	119.	118.	70.	48.	0.	121.4
1250.	118.	118.	68.	49.	0.	121.2
1600.	118.	118.	65.	49.	0.	120.8
2000.	117.	117.	62.	49.	0.	120.0
2500.	116.	116.	60.	50.	0.	118.9
3150.	115.	114.	57.	50.	0.	117.5
4000.	113.	113.	54.	50.	0.	116.0
5000.	111.	112.	52.	50.	0.	114.5
OASPL	130.6	127.4	99.4	59.7	0.0	132.3

CASE 10,F04,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	433.	199.	60.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 59.2 DELTA = 81.4

PEAK JET MIX LEVEL= 124. DB AT 437. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 108. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 69. DB AT 111. HZ
PEAK SEP LEVEL= 43. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	117.	88.	56.	18.	0.	117.2
31.	118.	89.	58.	20.	0.	117.9
40.	119.	90.	61.	21.	0.	118.6
50.	119.	92.	64.	23.	0.	119.3
63.	120.	93.	66.	25.	0.	119.9
80.	121.	94.	68.	26.	0.	120.6
100.	121.	96.	69.	28.	0.	121.3
125.	122.	97.	69.	30.	0.	121.9
160.	123.	98.	68.	31.	0.	122.7
200.	123.	100.	66.	33.	0.	123.3
250.	124.	101.	64.	35.	0.	123.9
315.	124.	102.	61.	36.	0.	124.1
400.	124.	104.	58.	37.	0.	123.8
500.	123.	105.	56.	38.	0.	123.5
630.	123.	106.	53.	39.	0.	123.1
800.	123.	107.	50.	40.	0.	123.3
1000.	123.	108.	48.	40.	0.	123.3
1250.	123.	108.	45.	41.	0.	123.0
1600.	122.	108.	42.	42.	0.	122.4
2000.	121.	107.	40.	42.	0.	121.6
2500.	120.	106.	37.	42.	0.	120.5
3150.	119.	104.	34.	43.	0.	119.2
4000.	117.	103.	31.	43.	0.	117.6
5000.	116.	102.	29.	43.	0.	115.8
OASPL	135.5	117.4	76.7	52.3	0.0	135.6

CASE 11,F05,BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAF=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	433.	199.	90.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 59.2 DELTA = 51.4

PEAK JET MIX LEVEL= 128. DB AT 335. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 112. DB AT 1200. HZ
STE= 76. ,DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 75. DB AT 111. HZ
PEAK SEP LEVEL= 61. DB AT 4743. HZ
NO TBL ACTIVITY,A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	121.	92.	61.	36.	0.	121.4
31.	122.	93.	64.	37.	0.	122.1
40.	123.	94.	67.	39.	0.	122.9
50.	124.	96.	69.	41.	0.	123.6
63.	124.	97.	72.	42.	0.	124.3
80.	125.	98.	74.	44.	0.	125.1
100.	126.	100.	74.	46.	0.	125.8
125.	126.	101.	74.	47.	0.	126.5
160.	127.	102.	73.	49.	0.	127.3
200.	128.	104.	72.	51.	0.	127.9
250.	128.	105.	69.	52.	0.	128.0
315.	128.	106.	66.	54.	0.	127.7
400.	127.	108.	64.	55.	0.	127.5
500.	127.	109.	61.	56.	0.	127.0
630.	126.	110.	58.	57.	0.	126.0
800.	126.	111.	56.	57.	0.	125.9
1000.	126.	112.	53.	58.	0.	125.8
1250.	125.	112.	50.	59.	0.	125.5
1600.	125.	112.	48.	59.	0.	124.9
2000.	124.	111.	45.	59.	0.	124.1
2500.	123.	110.	42.	60.	0.	123.1
3150.	121.	108.	40.	60.	0.	121.7
4000.	120.	107.	37.	60.	0.	120.1
5000.	118.	106.	34.	60.	0.	118.3
OASPL	139.1	121.4	82.1	69.8	0.0	139.1

CASE 12;F06;BKRL (BRAKE RELEASE)

ALT= 0. FT USB = 0. DEG R/RO =1.000
VA = 0. FT/S DOOR= CLOSED THETAS=-6. DEG
VJ = 870. FT/S VGS = UP THETAP=19. DEG

RIBBON	STA	WL	BL(IN)	BL(OUT)
AT NOZ EX	374.	208.	155.	209.
AT WNG TE	425.	201.	141.	212.
AT TR OFF	425.	201.	141.	212.
AT TR EDG	449.	193.	141.	212.
TRAIL EDGE	449.	193.	141.	212.
FIELD POINT	433.	199.	130.	

FIELD POINT IN ZONE 3 AND IS
INBOARD OF FLOW RIBBON
S= 59.2 DELTA = 11.5

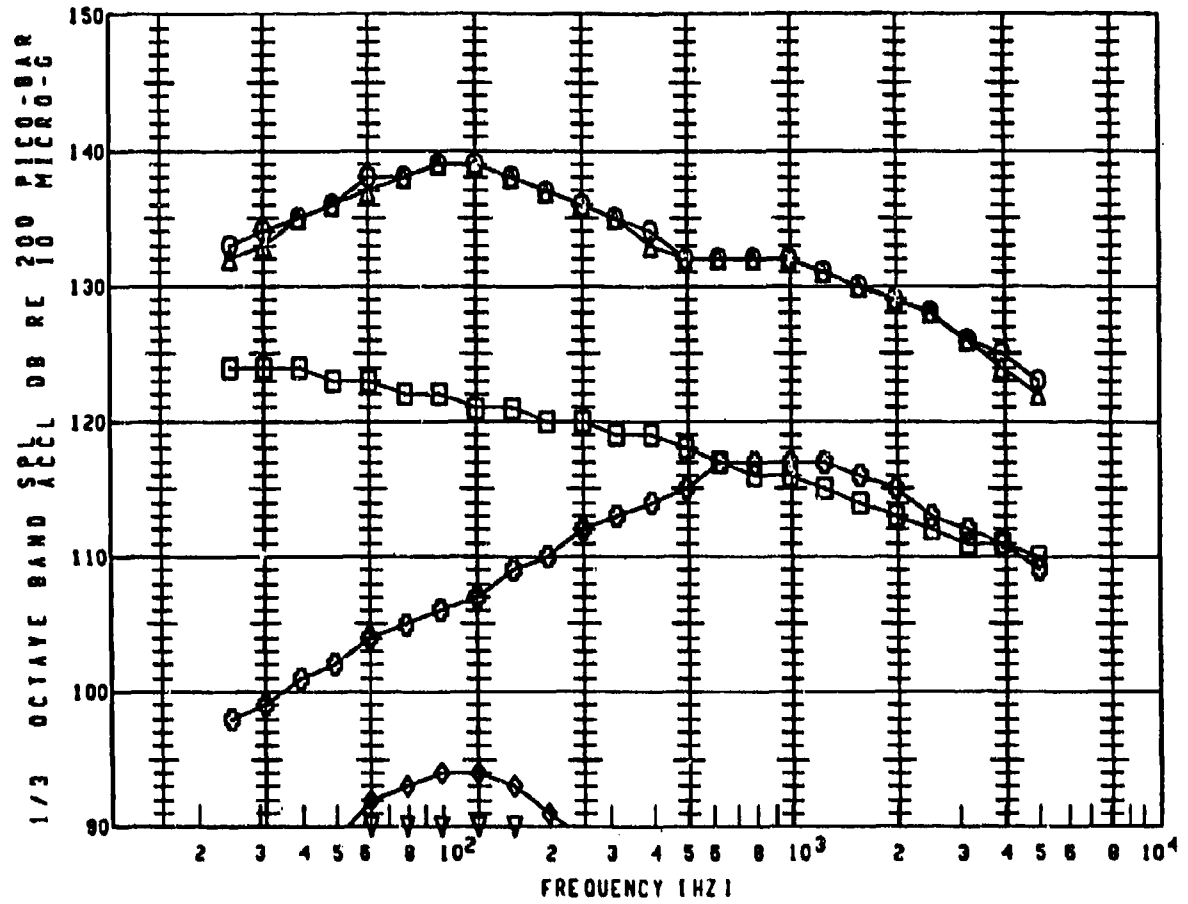
PEAK JET MIX LEVEL= 143. DB AT 123. HZ
CORRECTION FOR VGS APPLIED
DSPL= 5. DB F1= 2801. HZ
PEAK NEAR NOZ LEVEL= 127. DB AT 1200. HZ
STE= 76. ;DELTATE= 0.
PEAK TRAIL EDGE LEVEL= 84. DB AT 111. HZ
PEAK SEP LEVEL= 89. DB AT 4743. HZ
NO TBL ACTIVITY;A/P VELOCITY TOO SMALL

SPL-IN DB RE 200 PICOBAR (BY COMP AND SUM)

HZ	MIX	NN	TE	SEP	TBL	SUM
25.	136.	107.	71.	64.	0.	135.8
31.	137.	108.	74.	66.	0.	137.0
40.	138.	109.	77.	68.	0.	138.5
50.	140.	111.	79.	69.	0.	139.7
63.	141.	112.	82.	71.	0.	141.0
80.	142.	113.	83.	73.	0.	142.1
100.	143.	115.	84.	74.	0.	142.6
125.	143.	116.	84.	76.	0.	142.7
160.	142.	117.	83.	78.	0.	142.4
200.	142.	119.	81.	79.	0.	141.8
250.	141.	120.	79.	81.	0.	140.6
315.	139.	121.	76.	82.	0.	139.3
400.	138.	123.	73.	83.	0.	138.0
500.	137.	124.	71.	84.	0.	136.8
630.	135.	125.	68.	85.	0.	135.6
800.	135.	127.	65.	86.	0.	135.6
1000.	135.	127.	63.	87.	0.	135.6
1250.	135.	127.	60.	87.	0.	135.3
1600.	134.	127.	57.	88.	0.	134.7
2000.	133.	126.	55.	88.	0.	134.0
2500.	132.	125.	52.	88.	0.	132.9
3150.	131.	124.	50.	89.	0.	131.5
4000.	129.	122.	47.	89.	0.	129.9
5000.	127.	121.	44.	89.	0.	128.2
OASPL	152.4	136.5	92.0	98.5	0.0	152.5

SECTION V
COMPUTER PLOTS

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-INBOARD ENGINE



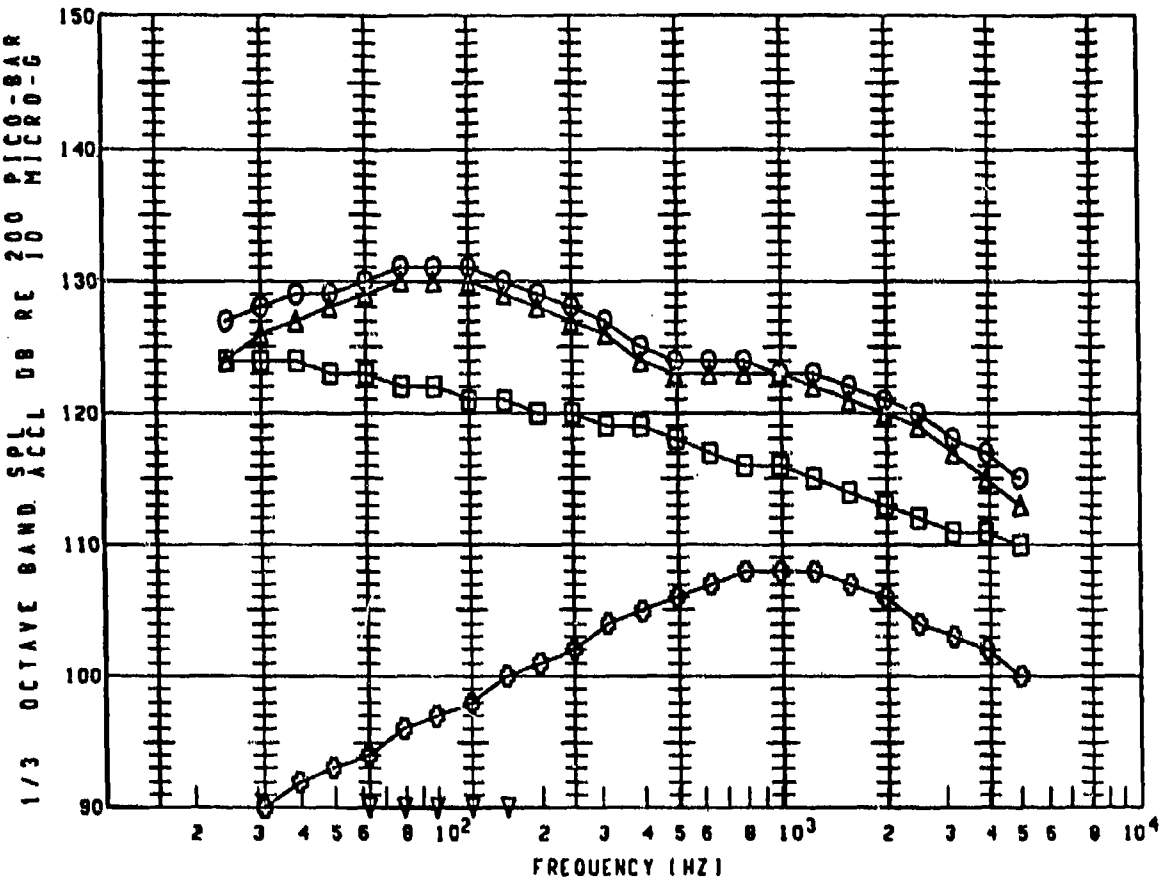
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B01	ST50						149
▽	B01	ST50						102
⊡	B01	ST50						134
◇	B01	ST50						102
⊗	B01	ST50						127
△	B01	ST50						148

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊗	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



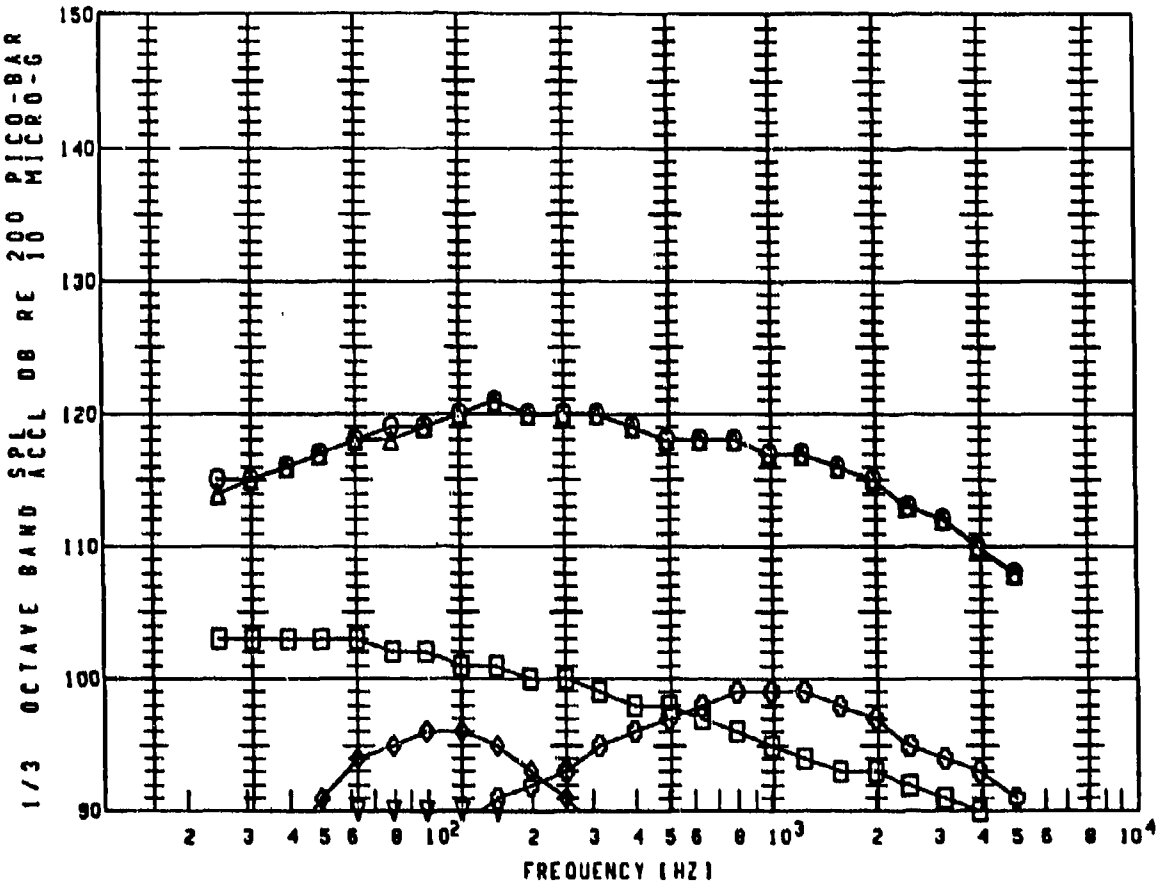
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B02	BKRL						141
▽	B02	BKRL						102
□	B02	BKRL						134
◇	B02	BKRL						87
⊙	B02	BKRL						117
△	B02	BKRL						140

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
□	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊙	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



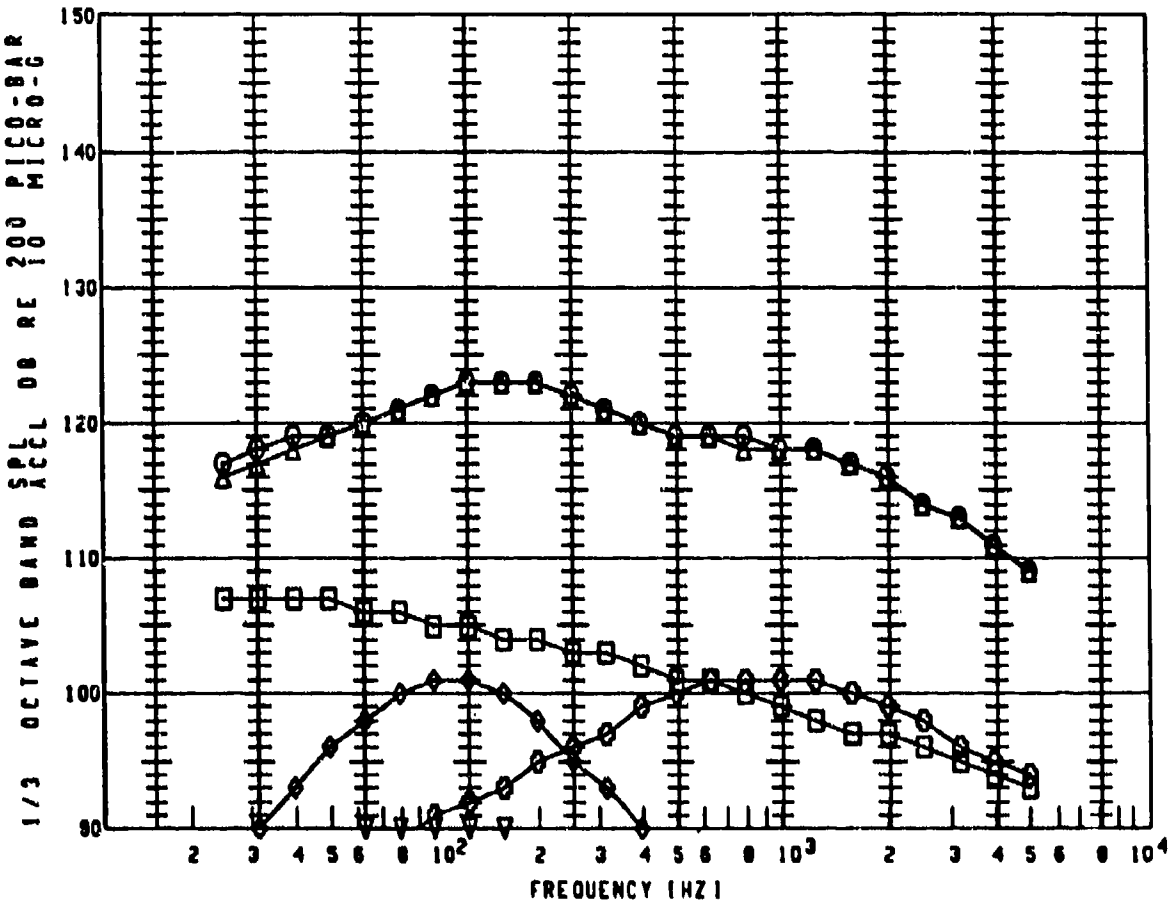
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B03	ST50						131
▽	B03	ST50						102
⊡	B03	ST50						113
◇	B03	ST50						104
◈	B03	ST50						108
△	B03	ST50						131

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
◈	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-INBOARD ENGINE



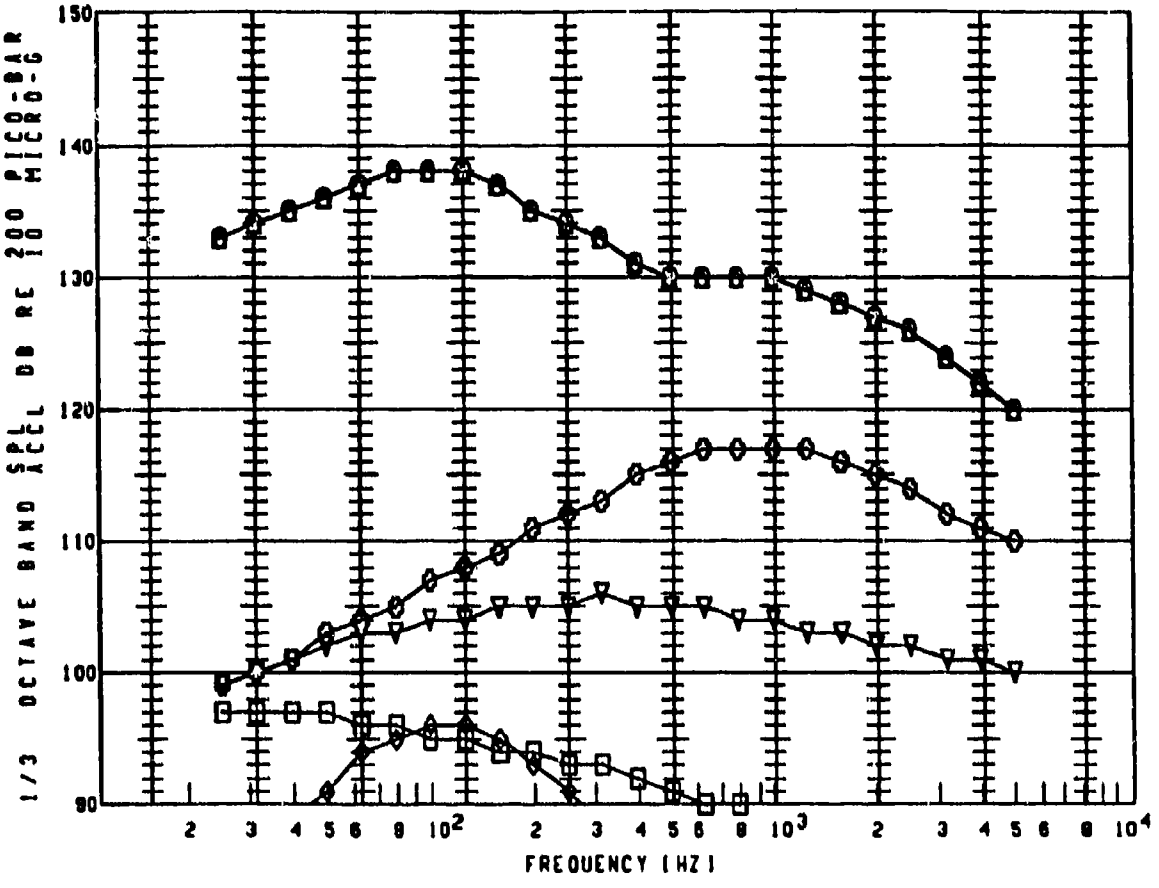
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B04	ST50						133
▽	B04	ST50						101
□	B04	ST50						117
◇	B04	ST50						109
◈	B04	ST50						111
△	B04	ST50						133

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
□	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
◈	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L HUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-INBOARD ENGINE

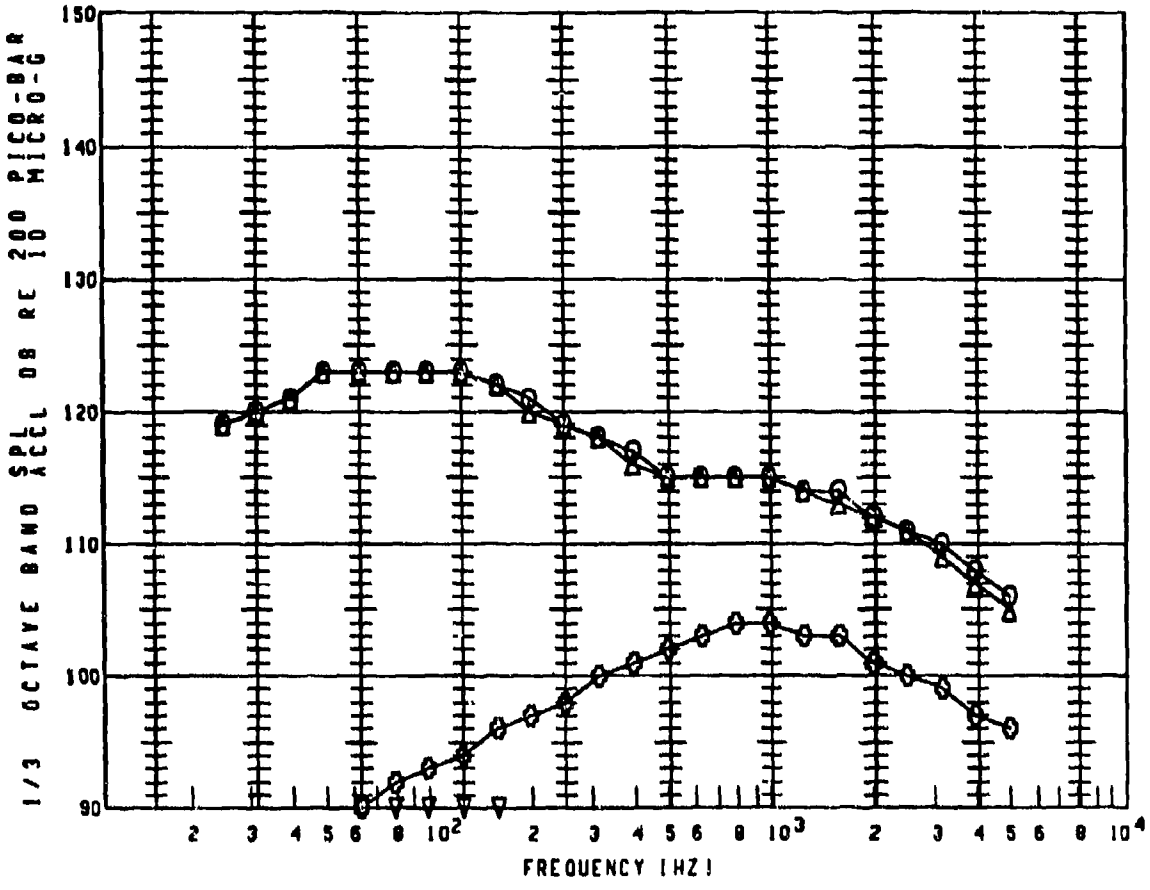


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	805	ST50						148
▽	805	ST50						117
⊡	805	ST50						107
◇	805	ST50						104
⊗	805	ST50						127
△	805	ST50						148

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊗	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



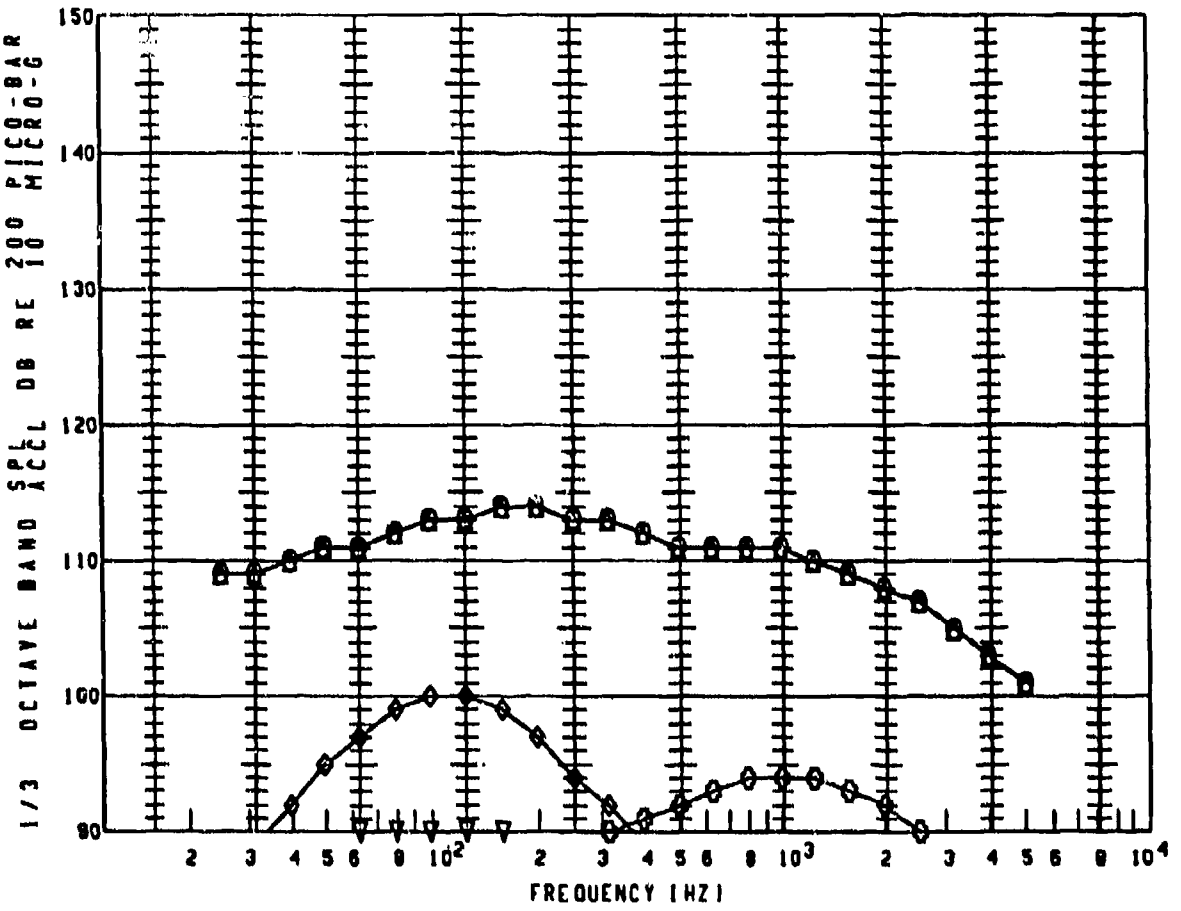
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B06	ST50						133
▽	B06	ST50						101
⊡	B06	ST50						99
◇	B06	ST50						0
⊗	B06	ST50						113
△	B06	ST50						133

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊗	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-INBOARD ENGINE

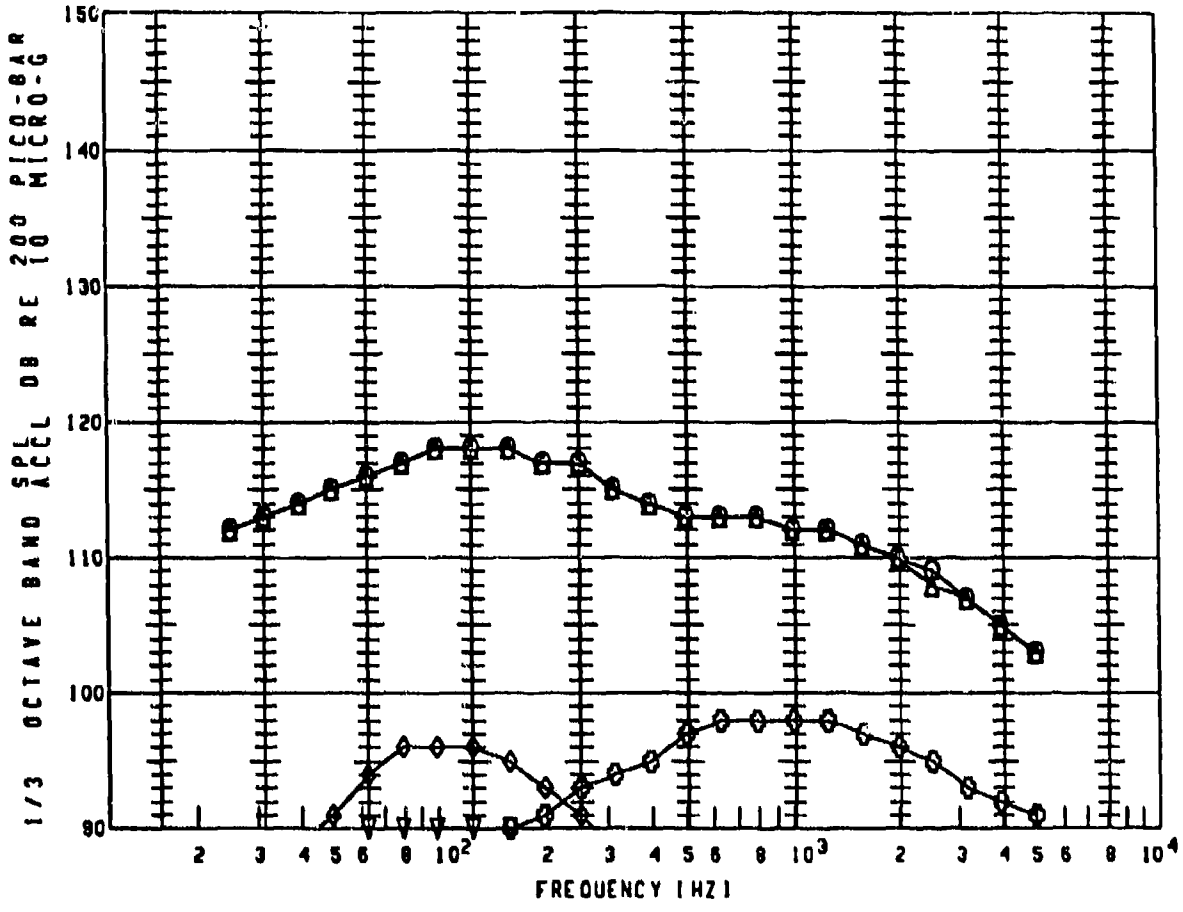


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	807	ST50						125
▽	807	ST50						101
⊡	807	ST50						91
◇	807	ST50						108
⊗	807	ST50						103
△	807	ST50						125

NOTES		
⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊗	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE

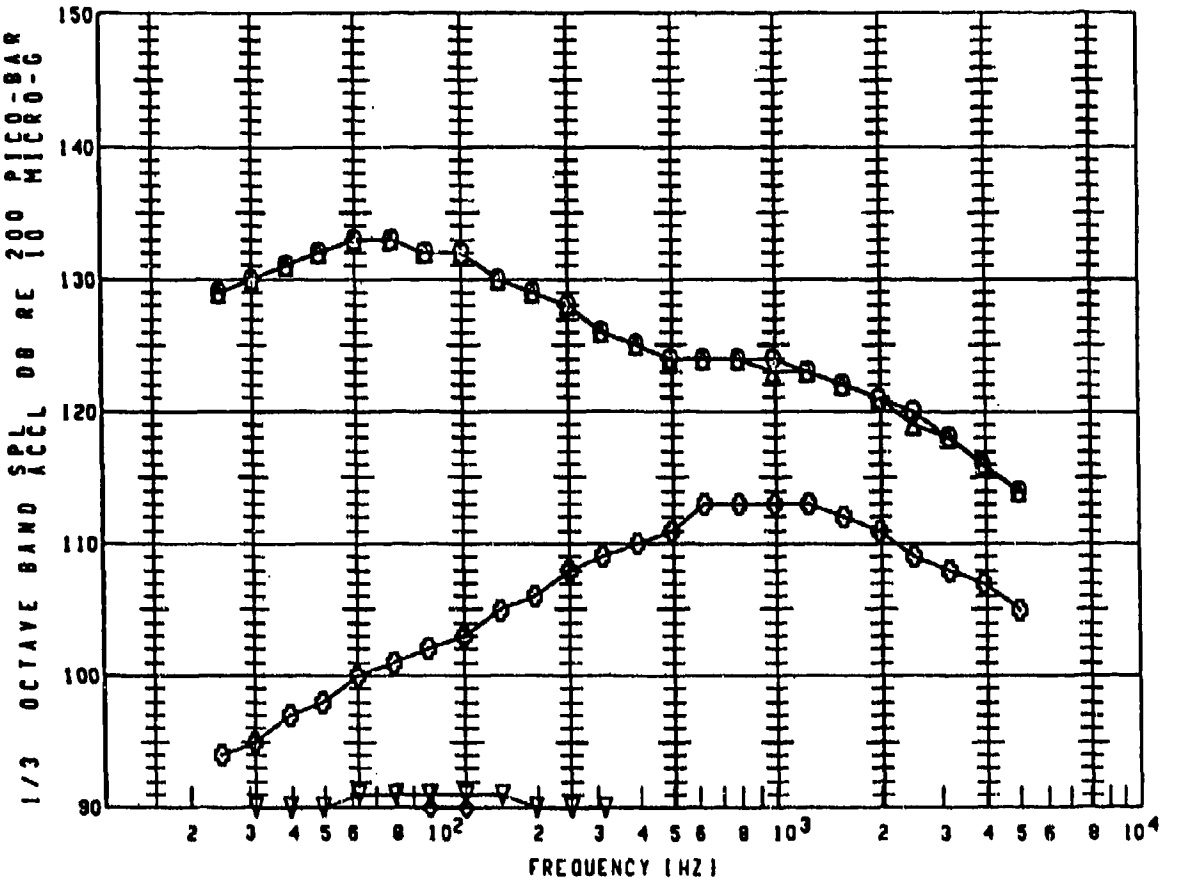


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	NI [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	808	ST50						128
▽	808	ST50						101
⊡	808	ST50						89
◇	808	ST50						104
⊗	808	ST50						108
△	808	ST50						128

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊗	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-INBOARD ENGINE

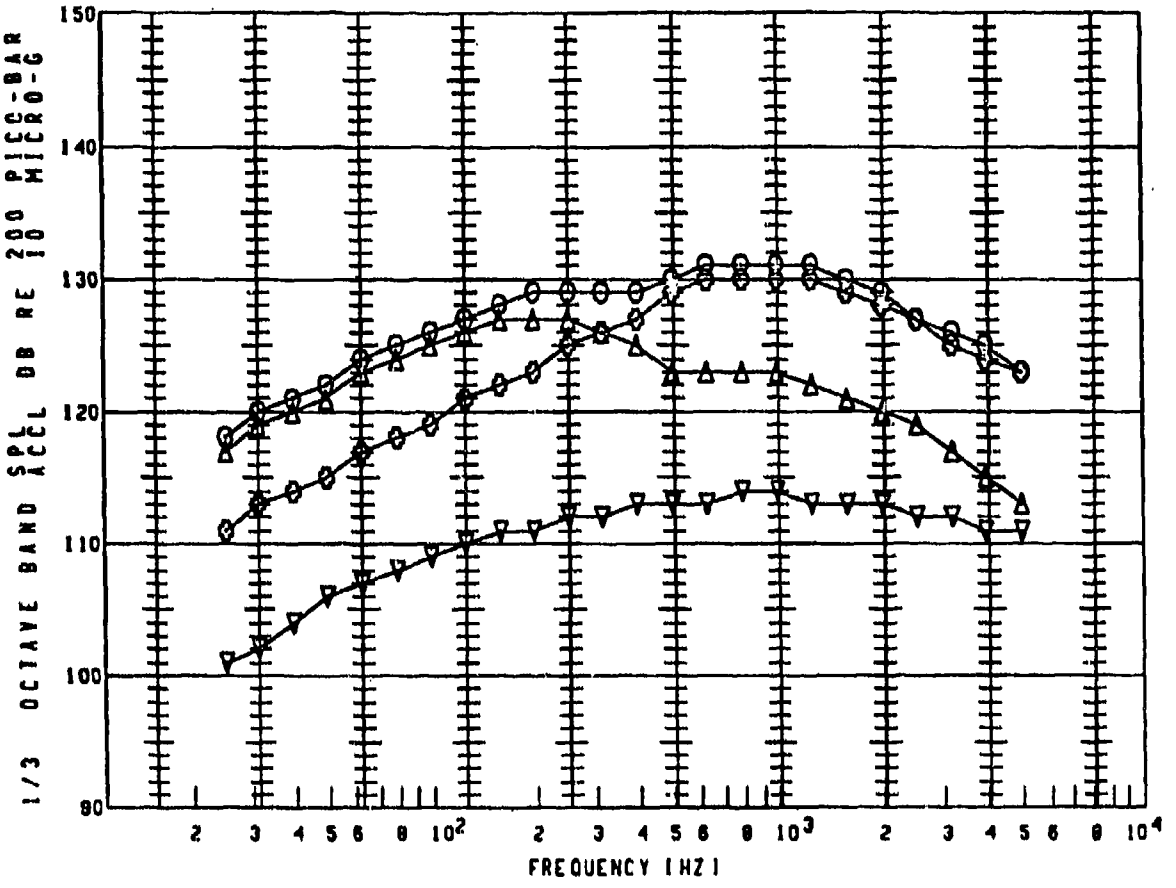


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	809	ST50						142
▽	809	ST50						103
⊡	809	ST50						85
◇	809	ST50						98
⊙	809	ST50						123
△	809	ST50						142

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊙	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

PREDICTION FOR QSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



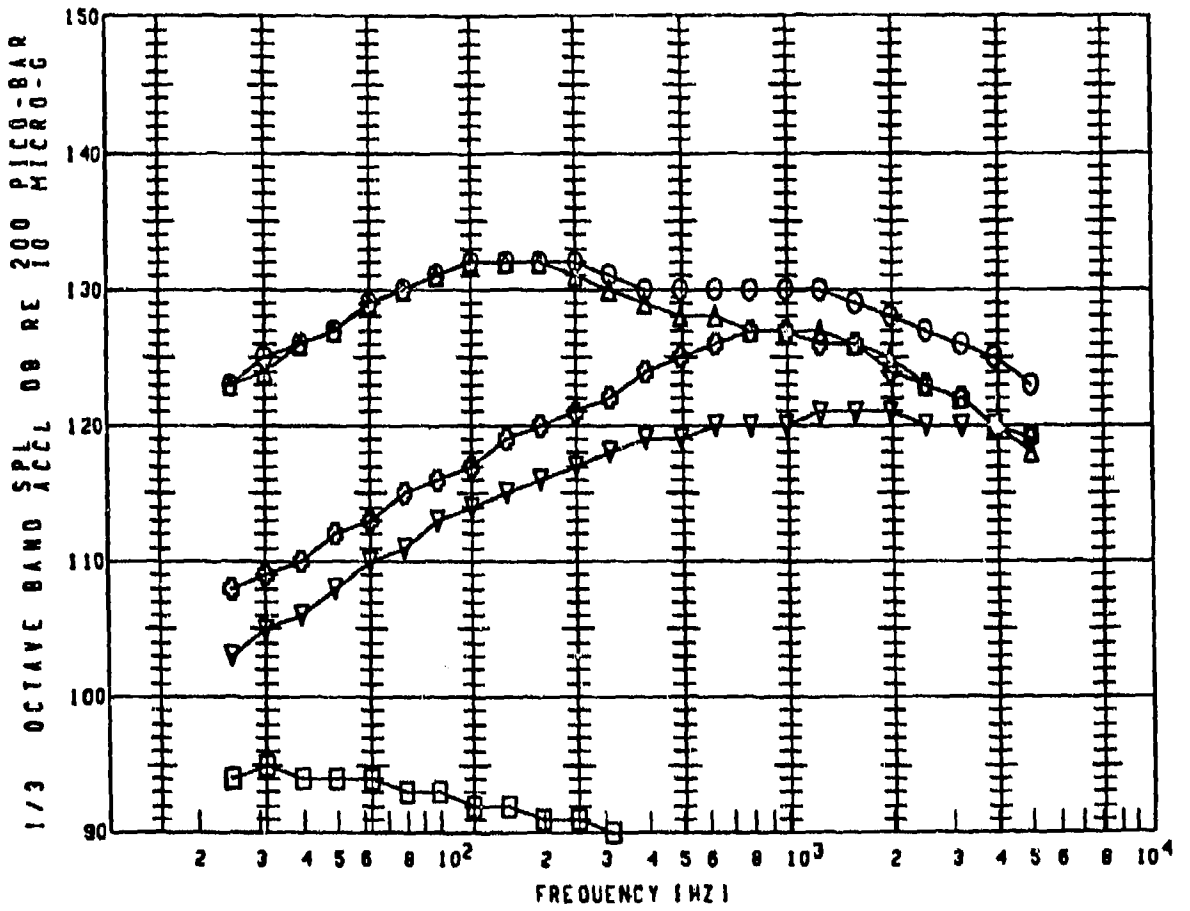
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	N1 [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	V01	ST50						142
▽	V01	ST50						125
⊡	V01	ST50						98
◇	V01	ST50						0
⊙	V01	ST50						140
△	V01	ST50						137

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊙	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



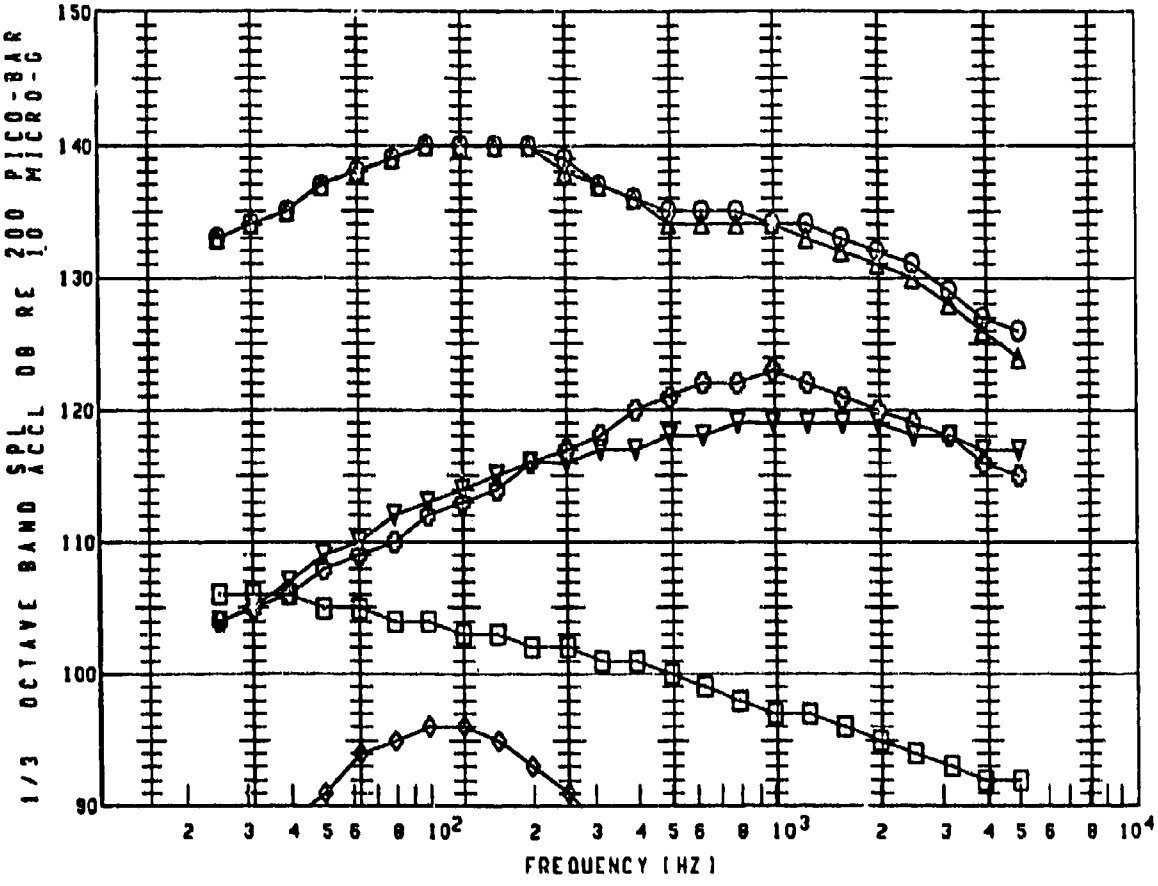
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	W02	ST50						143
▽	W02	ST50						132
⊡	W02	ST50						105
◇	W02	ST50						92
⬡	W02	ST50						136
△	W02	ST50						142

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⬡	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



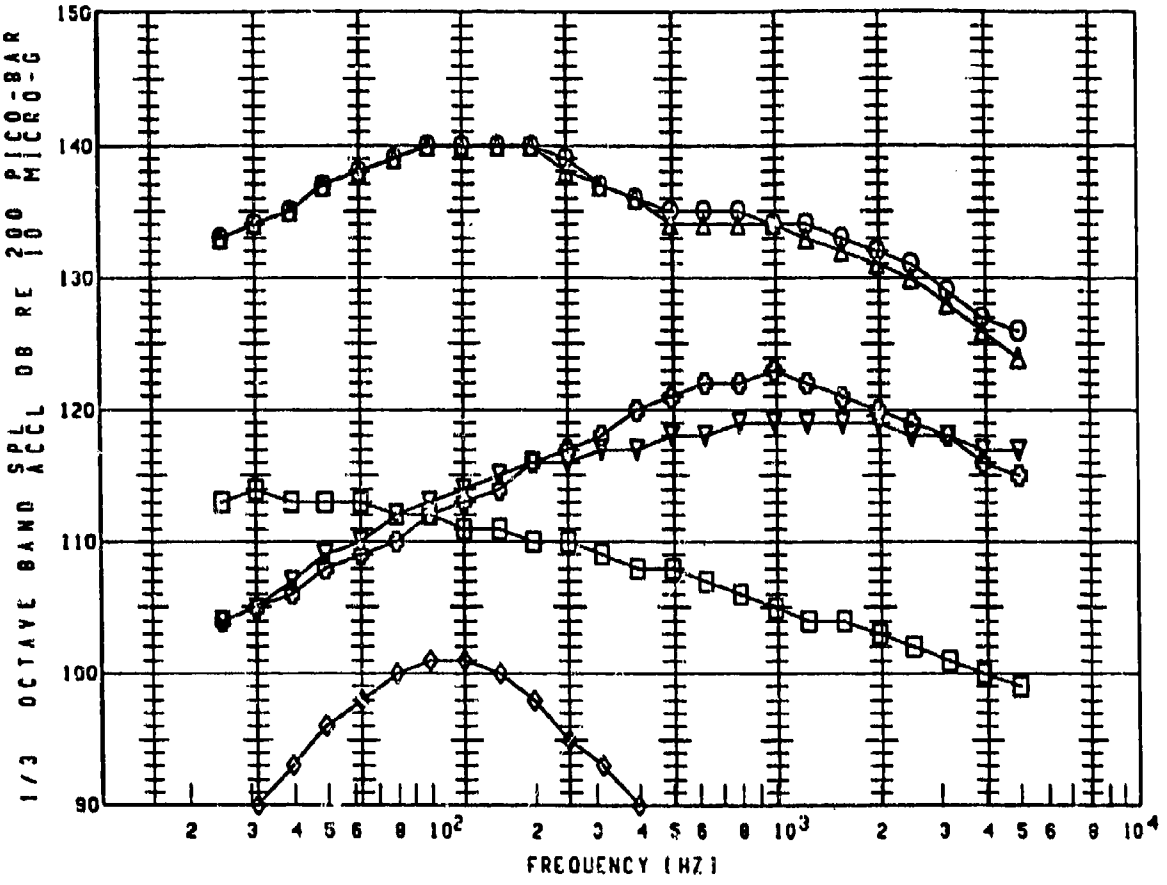
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	NI [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	F01	ST50						150
▽	F01	ST50						130
⊡	F01	ST50						116
◇	F01	ST50						104
⊛	F01	ST50						132
△	F01	ST50						150

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊛	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 09/21/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-INBOARD ENGINE



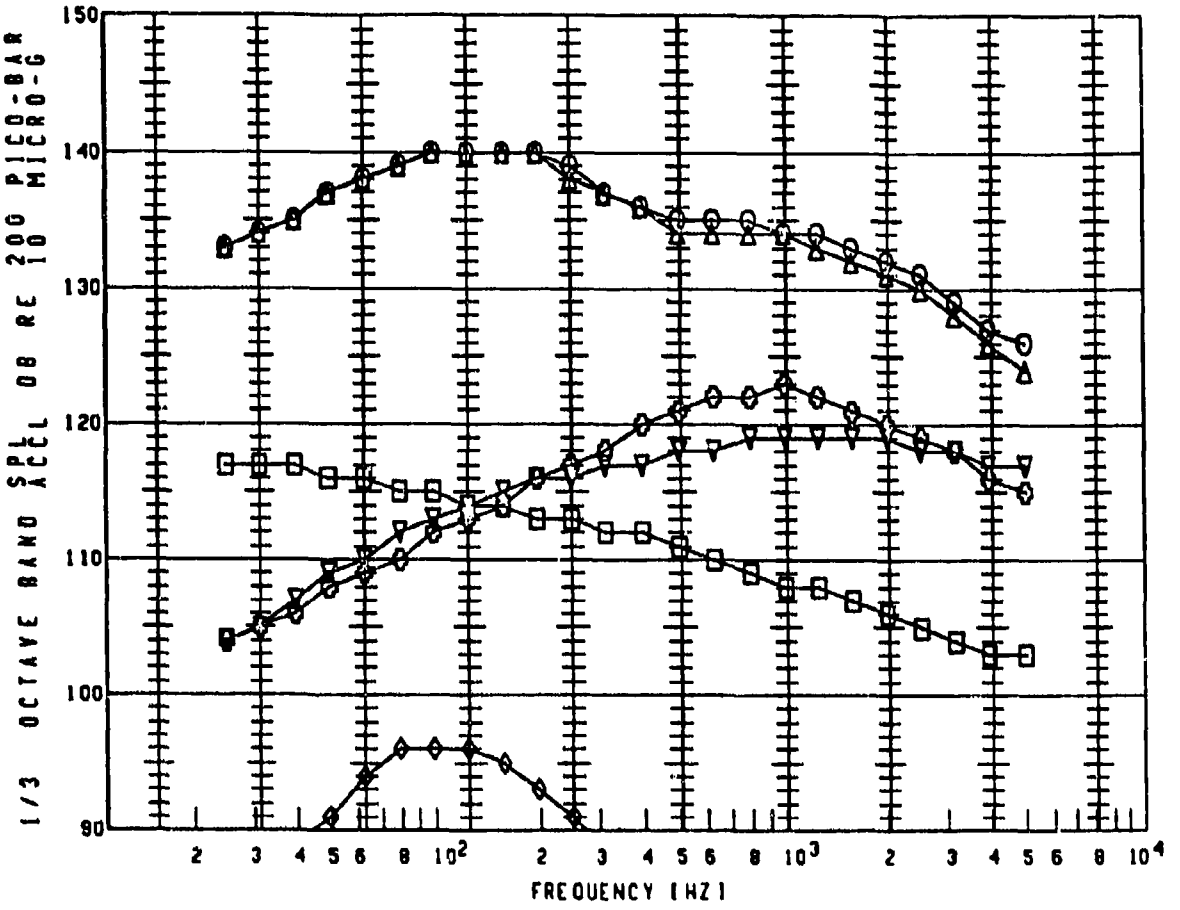
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F02	ST50						150
▽	F02	ST50						130
⊡	F02	ST50						24
◇	F02	ST50						09
⊙	F02	ST50						132
△	F02	ST50						150

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊙	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=SC-INBOARD ENGINE



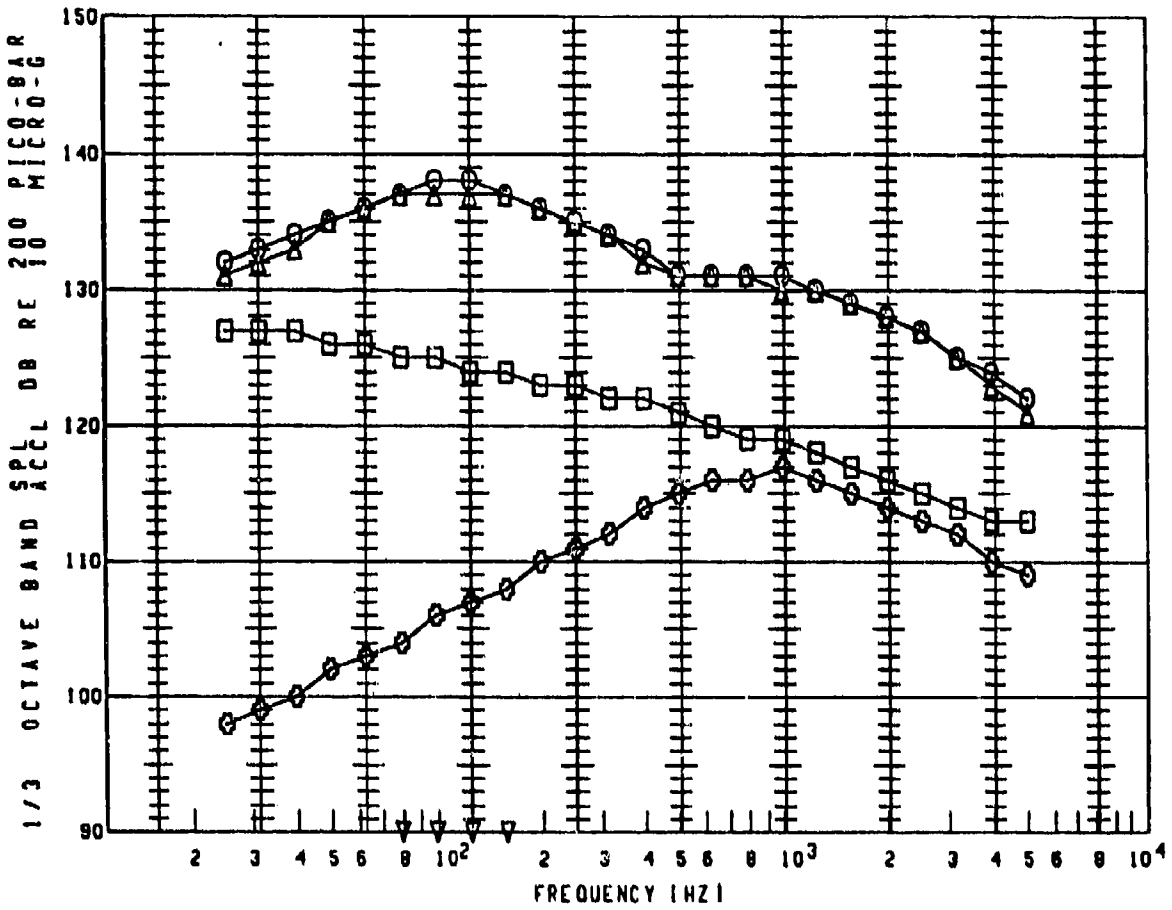
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	NI [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	F03	ST50						150
▽	F03	ST50						130
⊡	F03	ST50						127
◇	F03	ST50						104
◈	F03	ST50						132
△	F03	ST50						150

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
◈	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



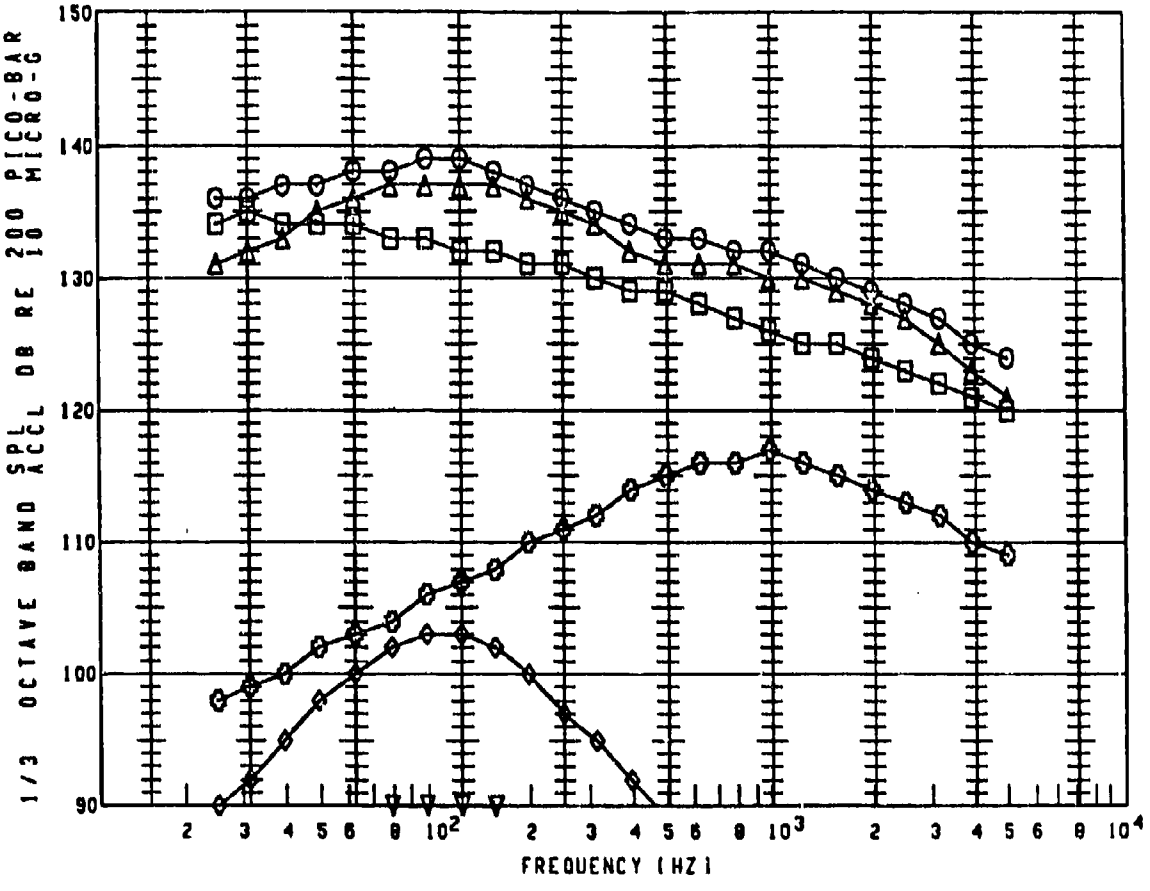
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F04	ST50						147
▽	F04	ST50						102
⊡	F04	ST50						137
◇	F04	ST50						97
⊙	F04	ST50						126
△	F04	ST50						147

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊙	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-INBOARD ENGINE



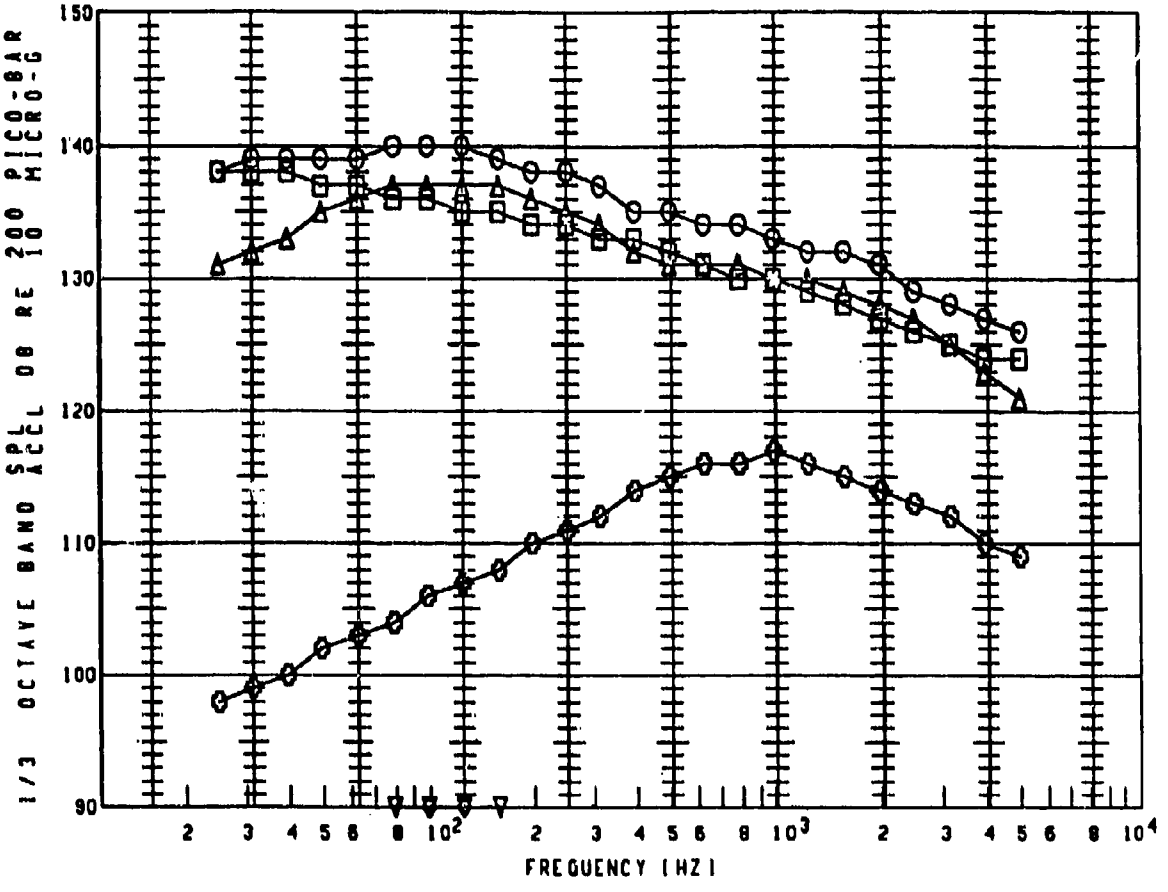
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F05	ST50						149
▽	F05	ST50						102
⊡	F05	ST50						145
◇	F05	ST50						111
⊘	F05	ST50						126
△	F05	ST50						147

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊘	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-INBOARD ENGINE



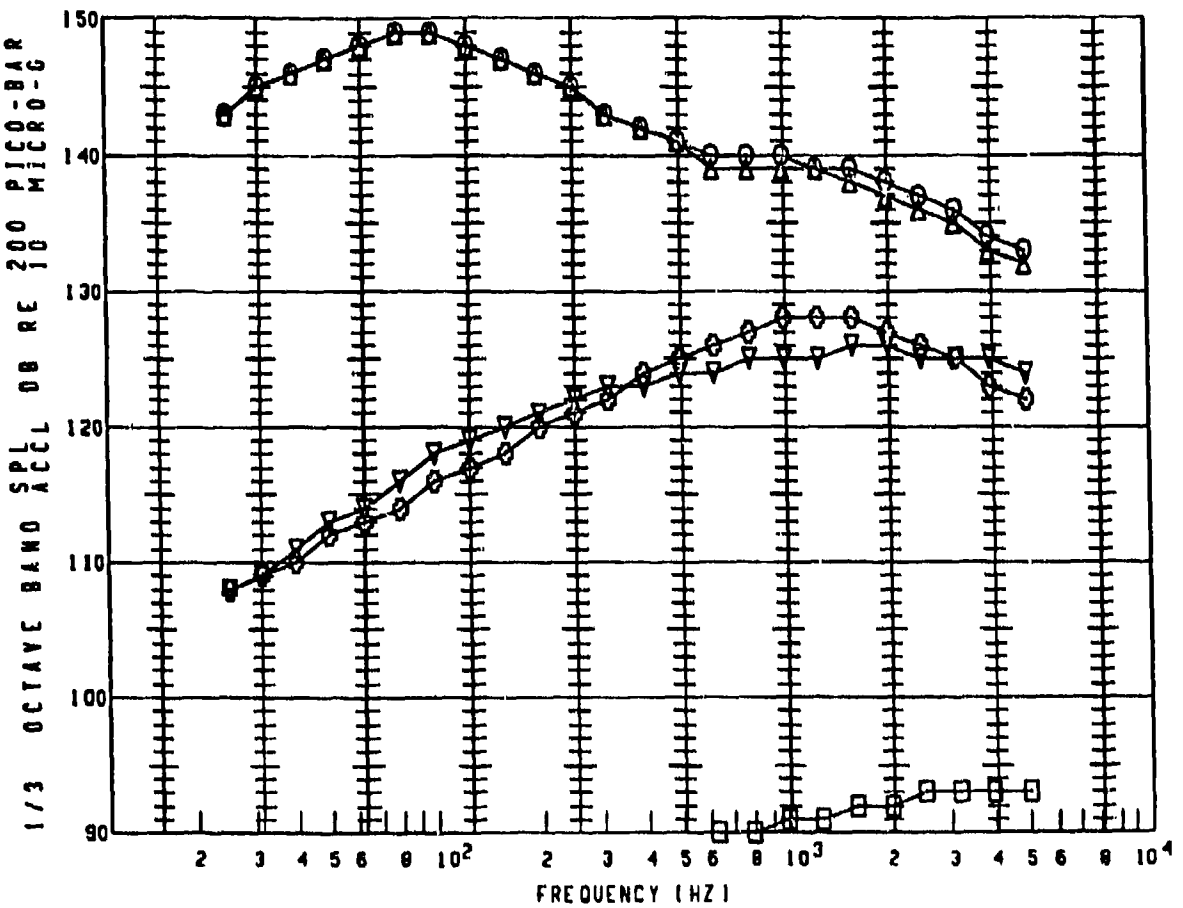
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F06	ST50						151
▽	F06	ST50						102
⊡	F06	ST50						148
◇	F06	ST50						98
⊛	F06	ST50						126
△	F06	ST50						147

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/21.
▽	PREDICTED TBL NOISE	79/03/21.
⊡	PREDICTED SEP NOISE	79/03/21.
◇	PREDICTED EDGE NOISE	79/03/21.
⊛	PREDICTED NN NOISE	79/03/21.
△	PREDICTED MIXING NOISE	79/03/21.

L BUTZEL/ 03/21/79

PREDICTION FOR OSRA TYPE AIRPLANE,BRAKE RELEASE-INBOARD ENGINE



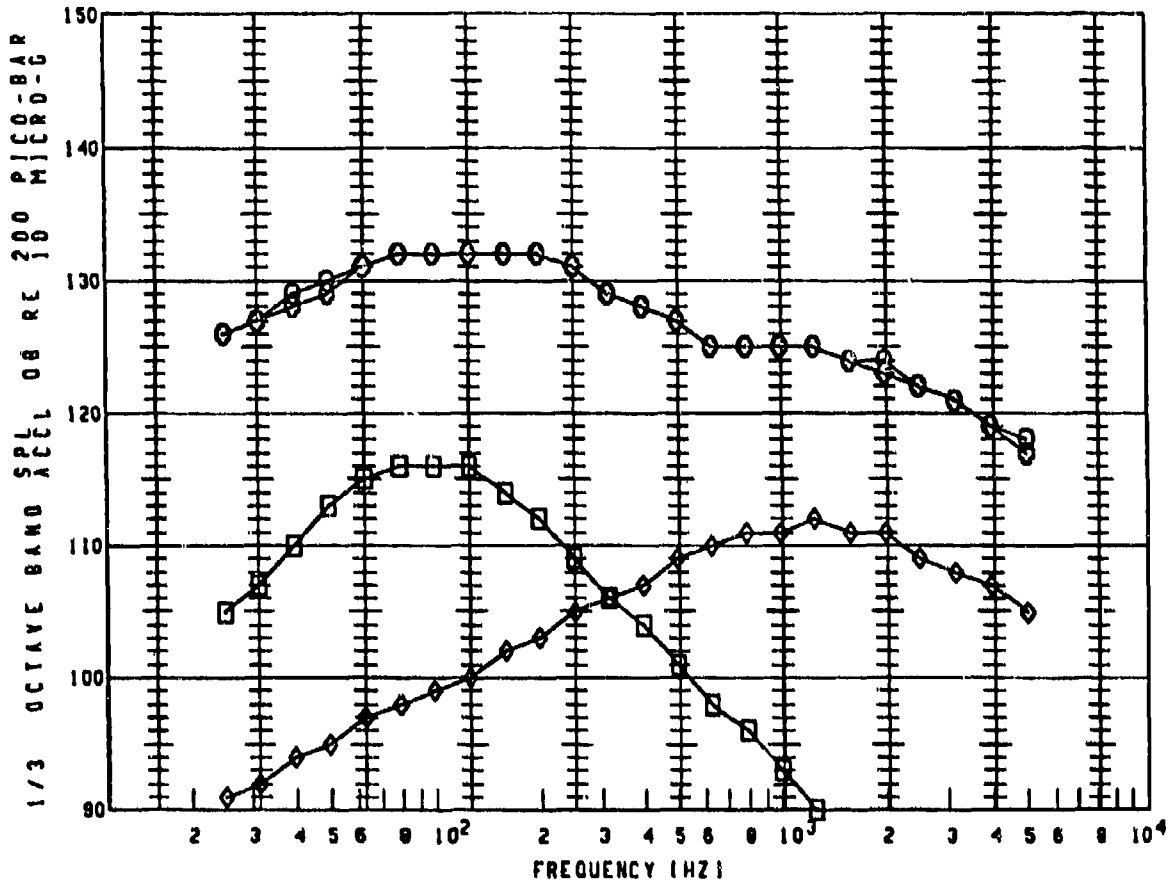
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	801	BKRL						158
▽	801	BKRL						137
⊡	801	BKRL						103
◇	801	BKRL						94
◈	801	BKRL						137
△	801	BKRL						158

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/16.
▽	PREDICTED TBL NOISE	79/03/16.
⊡	PREDICTED SEP NOISE	79/03/16.
◇	PREDICTED EDGE NOISE	79/03/16.
◈	PREDICTED NN NOISE	79/03/16.
△	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



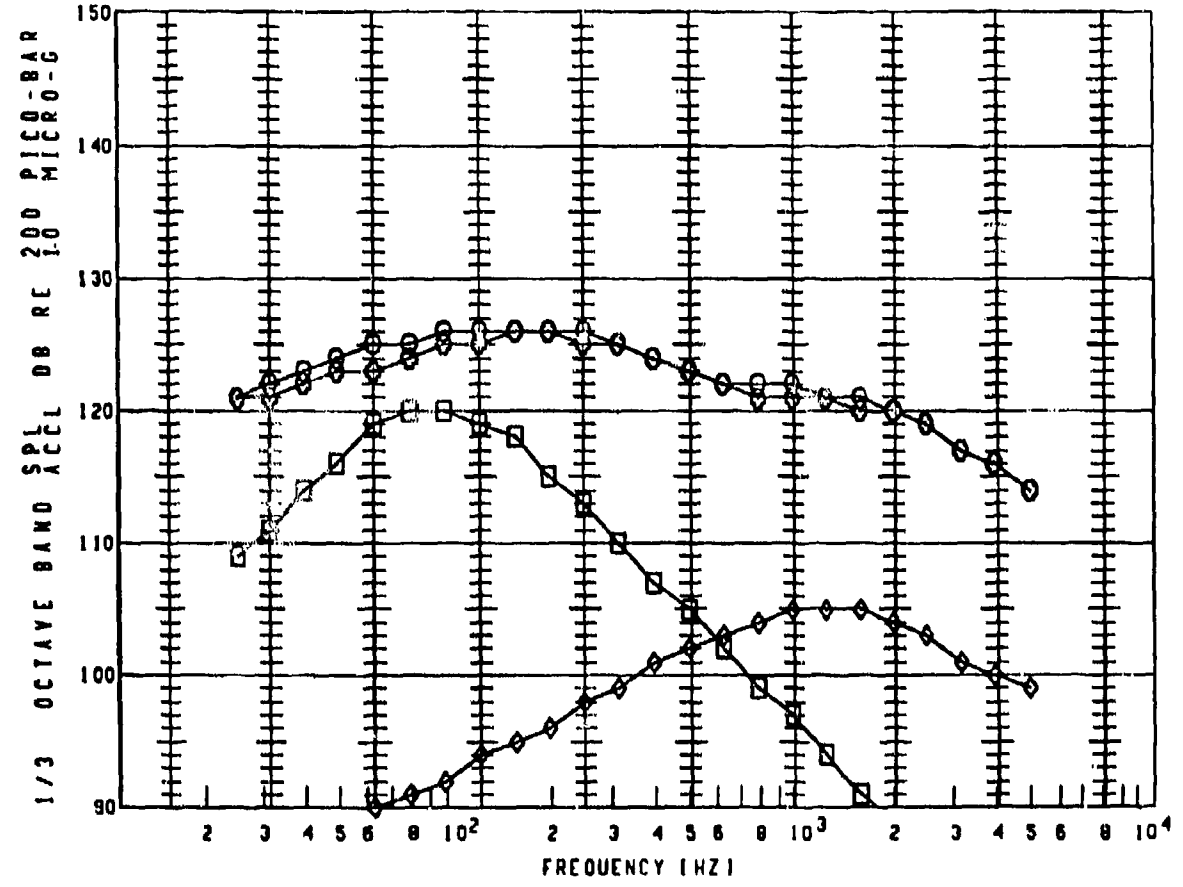
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	802	BKRL						142
▽	802	BKRL						0
⊡	802	BKRL						124
◇	802	BKRL						121
◈	802	BKRL						142

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/16.
▽	PREDICTED SEP NOISE	79/03/16.
⊡	PREDICTED EDGE NOISE	79/03/16.
◇	PREDICTED NN NOISE	79/03/16.
◈	PREDICTED MIXING NOISE	79/03/16.

L BUTZELZ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE, BRAKE RELEASE-INBOARD ENGINE



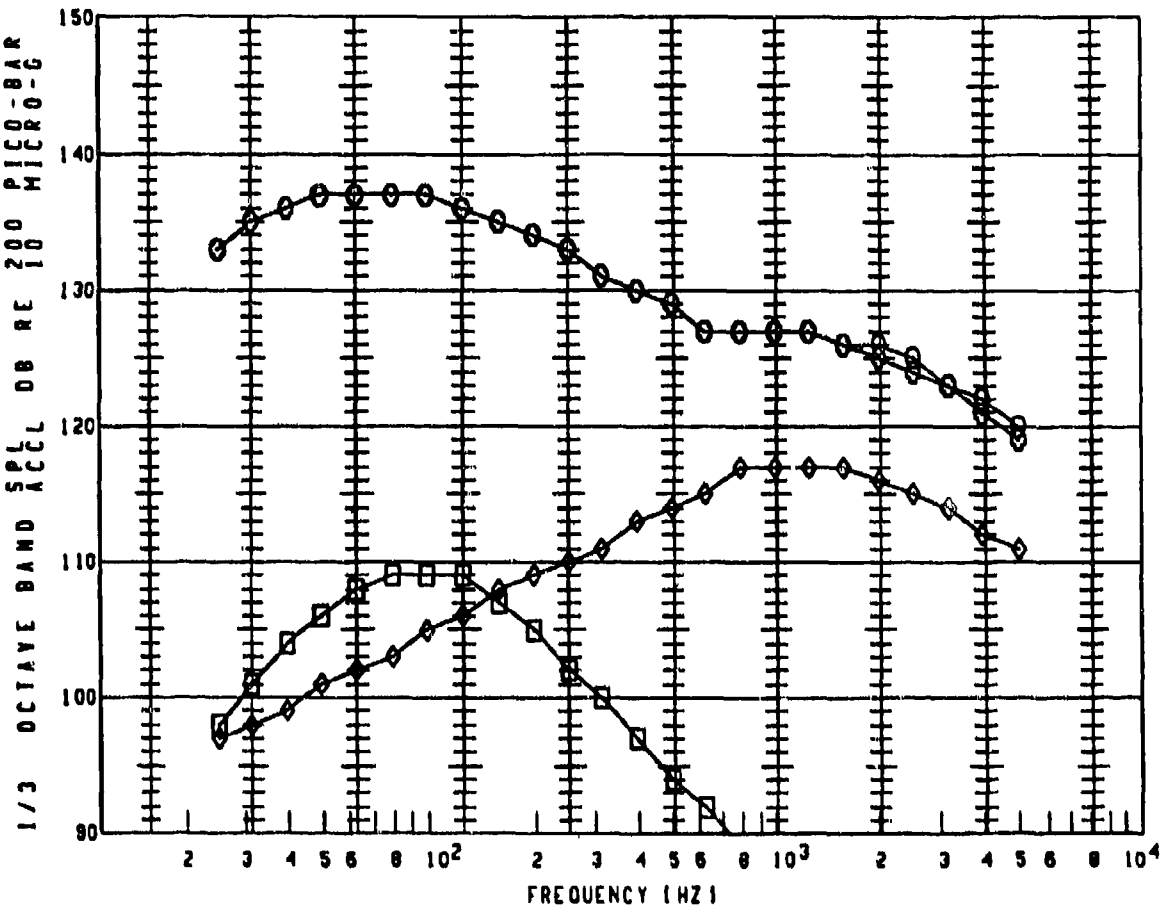
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B03	BKRL						137
▽	B03	BKRL						0
⊡	B03	BKRL						128
◇	B03	BKRL						114
⊛	B03	BKRL						137

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/16.
▽	PREDICTED SEP NOISE	79/03/16.
⊡	PREDICTED EDGE NOISE	79/03/16.
◇	PREDICTED NN NOISE	79/03/16.
⊛	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



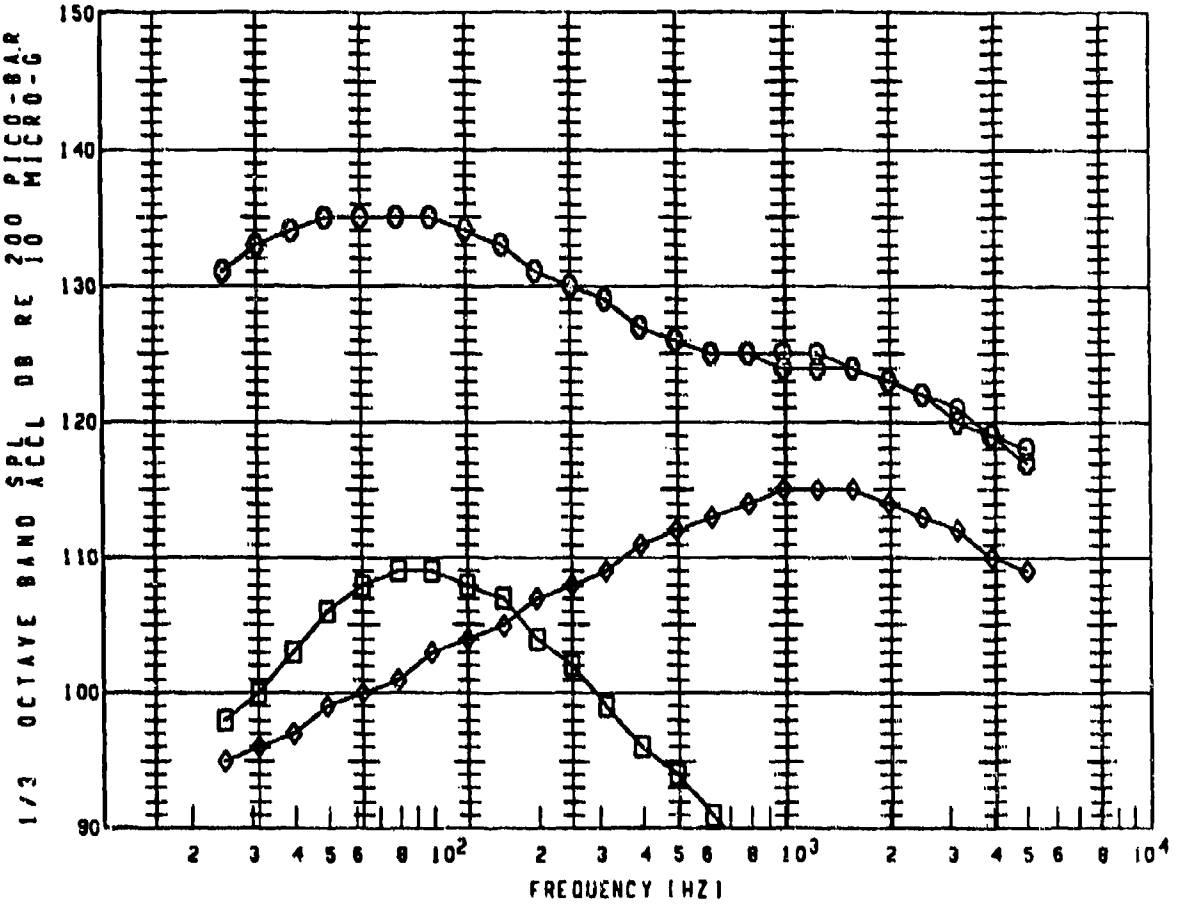
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B04	BKRL						147
▽	B04	BKRL						0
⊡	B04	BKRL						117
◇	B04	BKRL						127
⊙	B04	BKRL						147

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/16.
▽	PREDICTED SEP NOISE	79/03/16.
⊡	PREDICTED EDGE NOISE	79/03/16.
◇	PREDICTED NN NOISE	79/03/16.
⊙	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE, BRAKE RELEASE-INBOARD ENGINE

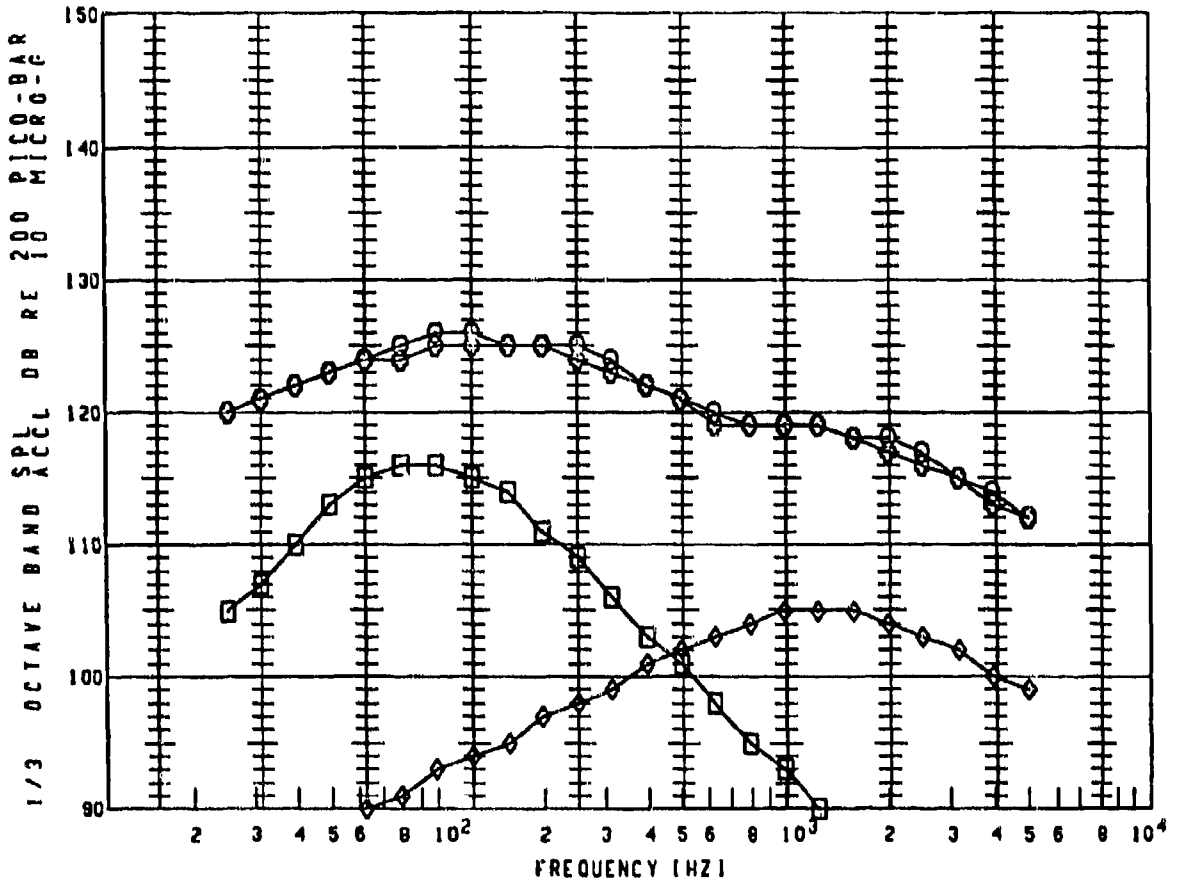


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	805	BKRL						145
▽	805	BKRL						0
⊡	805	BKRL						117
◇	805	BKRL						124
⊙	805	BKRL						145

NOTES

⊙	PREDICTED TOTAL NOISE, CREATED	79/03/16.
▽	PREDICTED SEP NOISE	79/03/16.
⊡	PREDICTED EDGE NOISE	79/03/16.
◇	PREDICTED NN NOISE	79/03/16.
⊙	PREDICTED MIXING NOISE	79/03/16.

PREDICTION FOR OSRA TYPE AIRPLANE,BRAKE RELEASE-INBOARD ENGINE

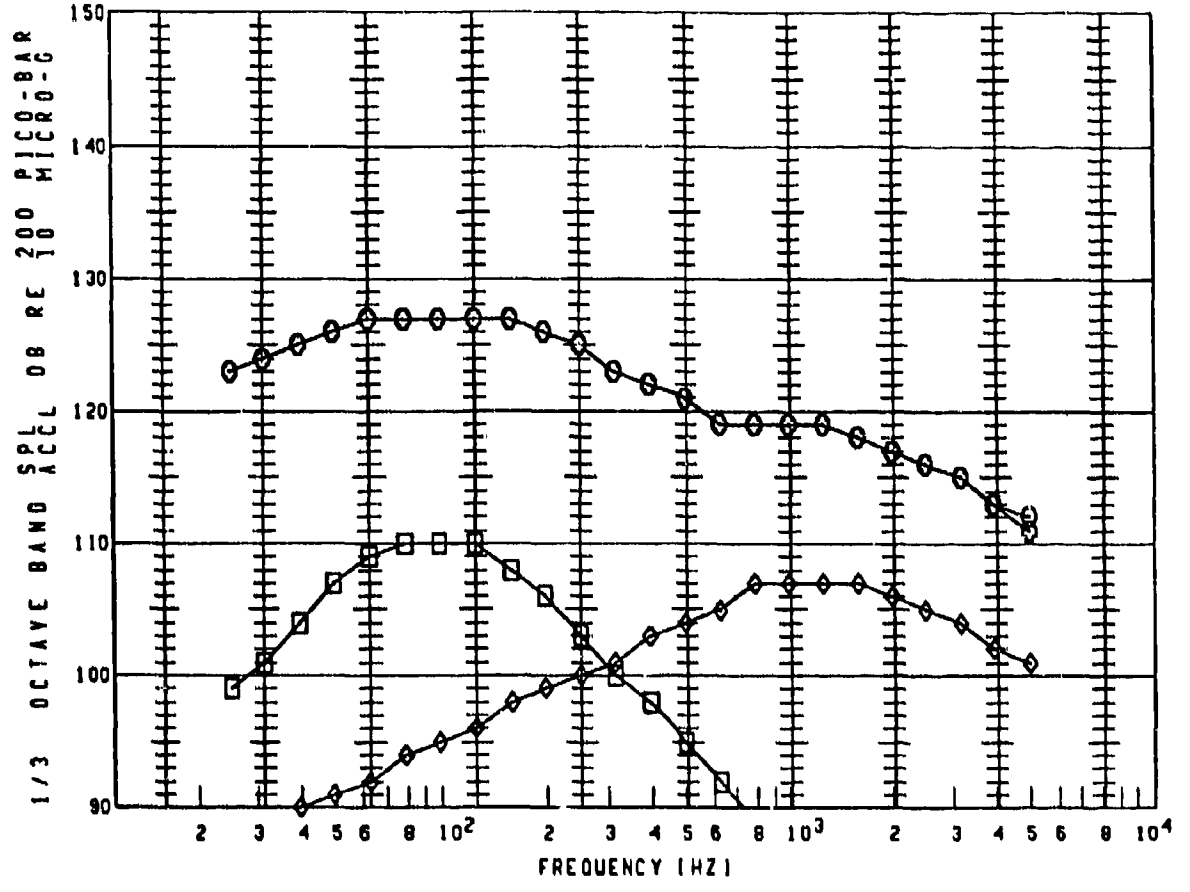


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B06	BKRL						136
▽	B06	BKRL						0
⊡	B06	BKRL						124
◇	B06	BKRL						114
⊙	B06	BKRL						136

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/16.
▽	PREDICTED SEP NOISE	79/03/16.
⊡	PREDICTED EDGE NOISE	79/03/16.
◇	PREDICTED NN NOISE	79/03/16.
⊙	PREDICTED MIXING NOISE	79/03/16.

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



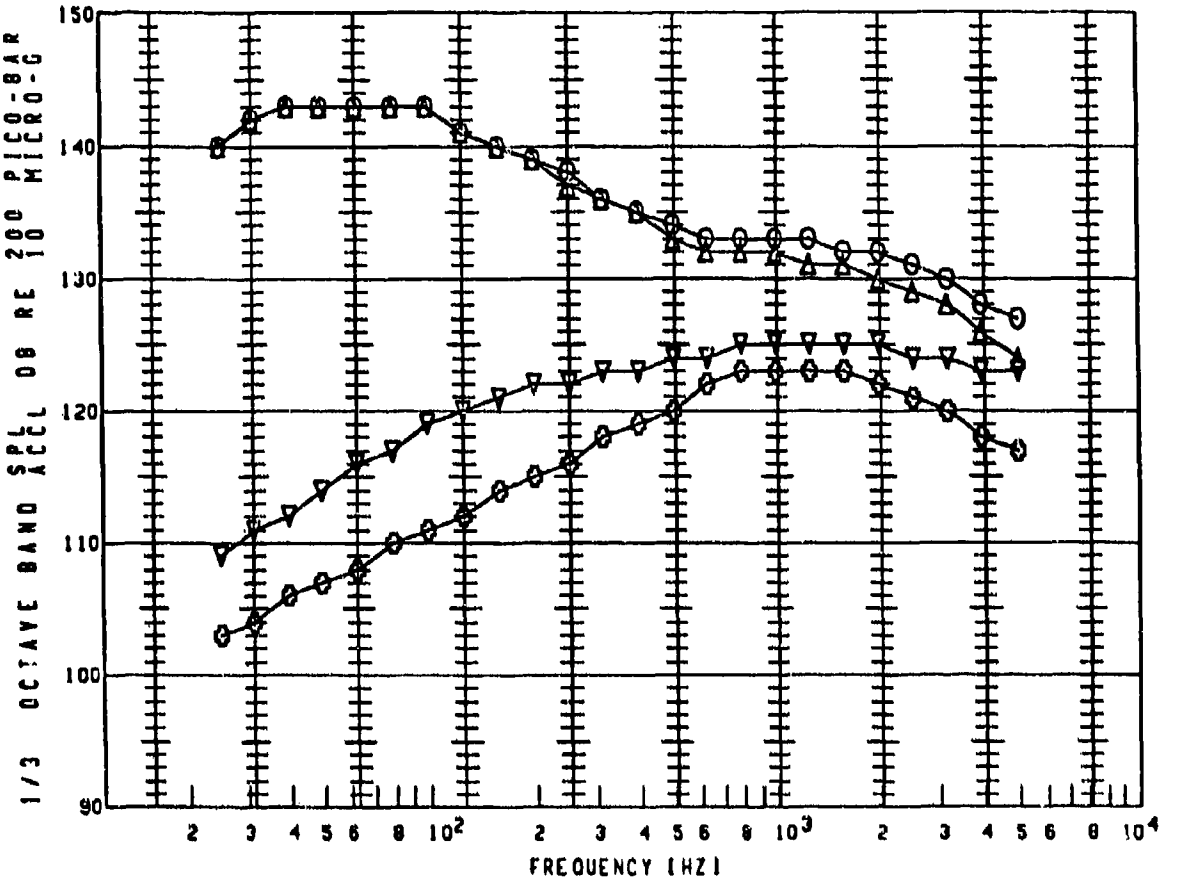
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B07	BKRL						137
▽	B07	BKRL						0
⊡	B07	BKRL						118
◇	B07	BKRL						117
⊙	B07	BKRL						137

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/16.
▽	PREDICTED SEP NOISE	79/03/16.
⊡	PREDICTED EDGE NOISE	79/03/16.
◇	PREDICTED NN NOISE	79/03/16.
⊙	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79

PREDICTION FOR QSRA TYPE AIRPLANE,BRAKE RELEASE-INBOARD ENGINE



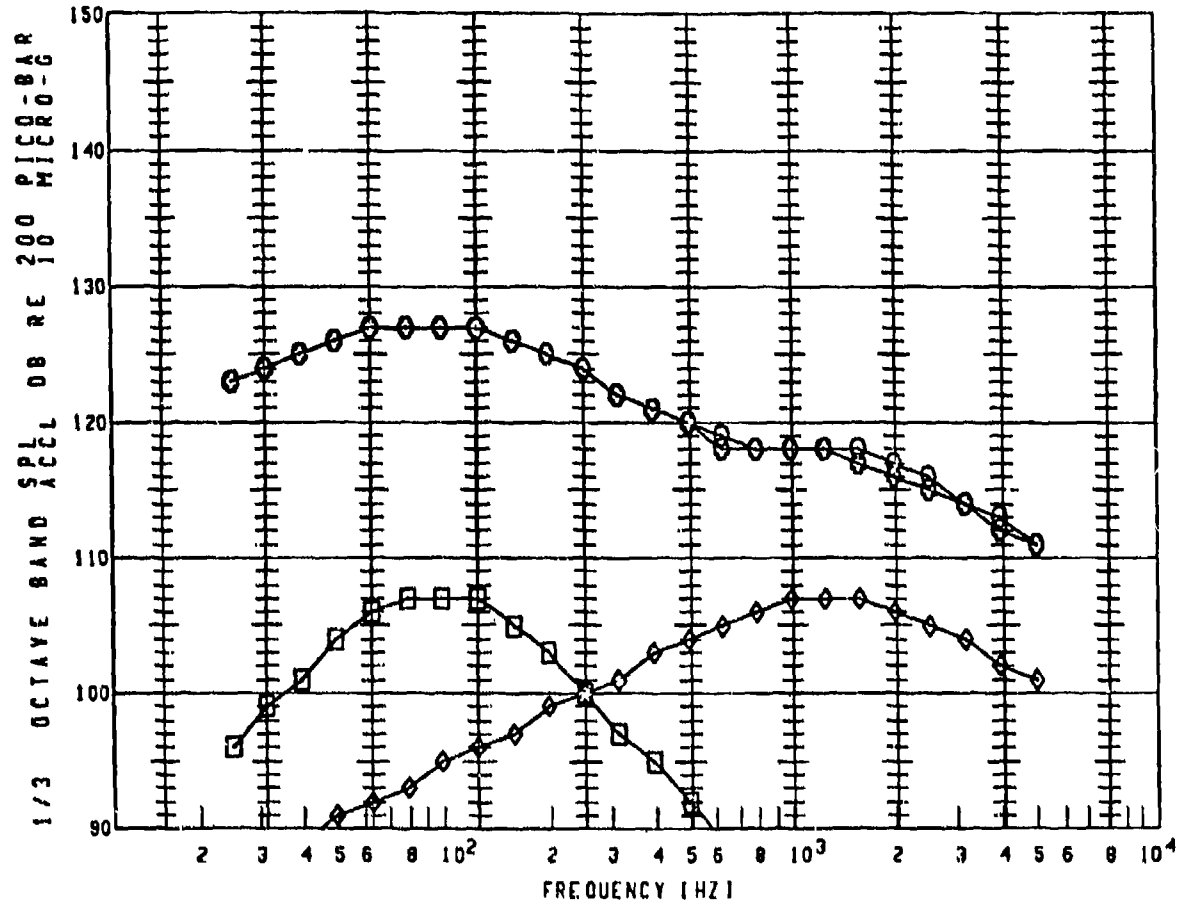
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	808	BKRL						153
▽	808	BKRL						136
⊡	808	BKRL						0
◇	808	BKRL						89
⬡	808	BKRL						133
△	808	BKRL						153

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/16.
▽	PREDICTED TBL NOISE	79/03/16.
⊡	PREDICTED SEP NOISE	79/03/16.
◇	PREDICTED EDGE NOISE	79/03/16.
⬡	PREDICTED NN NOISE	79/03/16.
△	PREDICTED MIXING NOISE	79/03/16.

L BUYZEL/ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



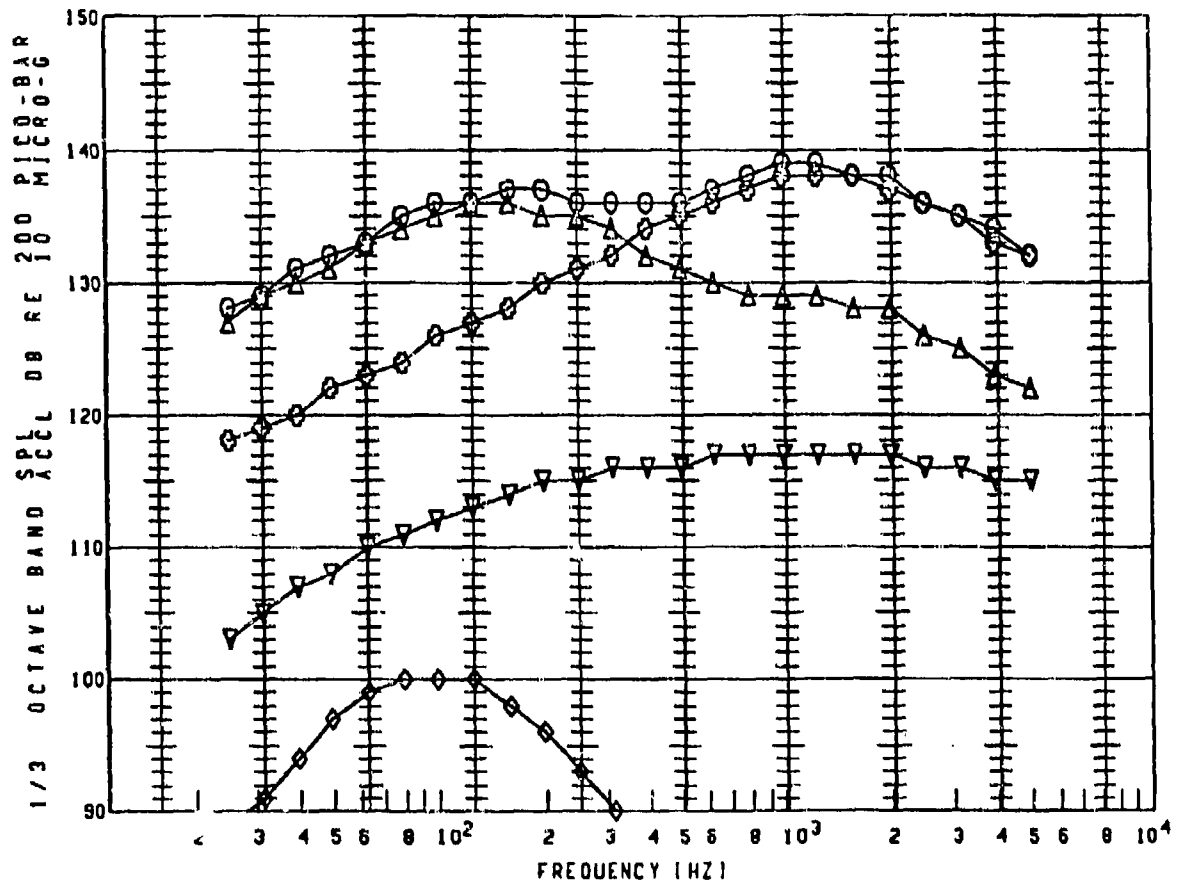
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [EPS]	N1 [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	B09	BKRL						137
▽	B09	BKRL						0
⊡	B09	BKRL						115
◇	B09	BKRL						116
⊙	B09	BKRL						137

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/16.
▽	PREDICTED SEP NOISE	79/03/16.
⊡	PREDICTED EDGE NOISE	79/03/16.
◇	PREDICTED NN NOISE	79/03/16.
⊙	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79.

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



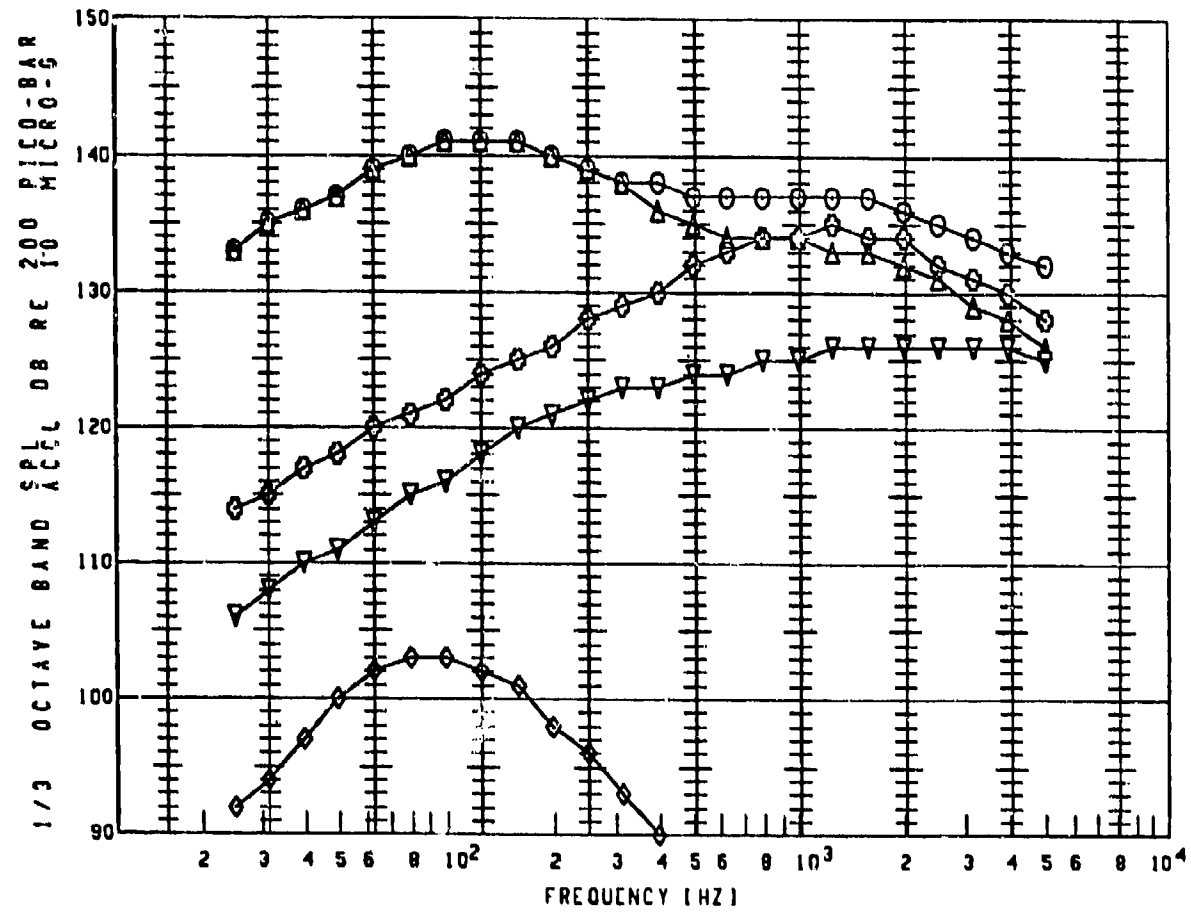
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	V01	BKRL						150
▽	V01	BKRL						129
⊡	V01	BKRL						0
◇	V01	BKRL						108
⊙	V01	BKRL						147
△	V01	BKRL						146

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/16.
▽	PREDICTED TBL NOISE	79/03/16.
⊡	PREDICTED SEP NOISE	79/03/16.
◇	PREDICTED EDGE NOISE	79/03/16.
⊙	PREDICTED NN NOISE	79/03/16.
△	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/18/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



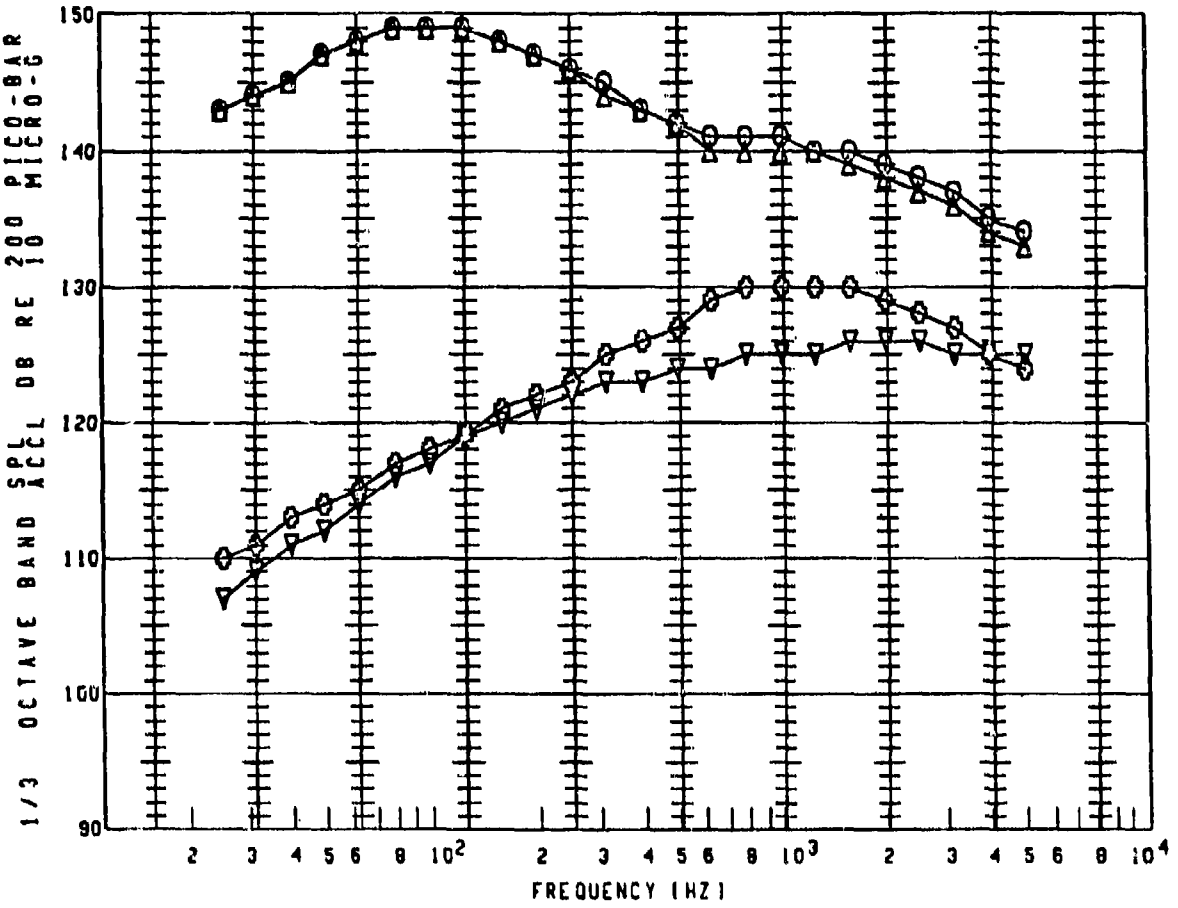
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	NI [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	V02	BKRL						152
▽	V02	BKRL						137
⊡	V02	BKRL						0
◇	V02	BKRL						111
⊙	V02	BKRL						144
△	V02	BKRL						151

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/16.
▽	PREDICTED TBL NOISE	79/03/16.
⊡	PREDICTED SEP NOISE	79/03/16.
◇	PREDICTED EDGE NOISE	79/03/16.
⊙	PREDICTED NN NOISE	79/03/16.
△	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



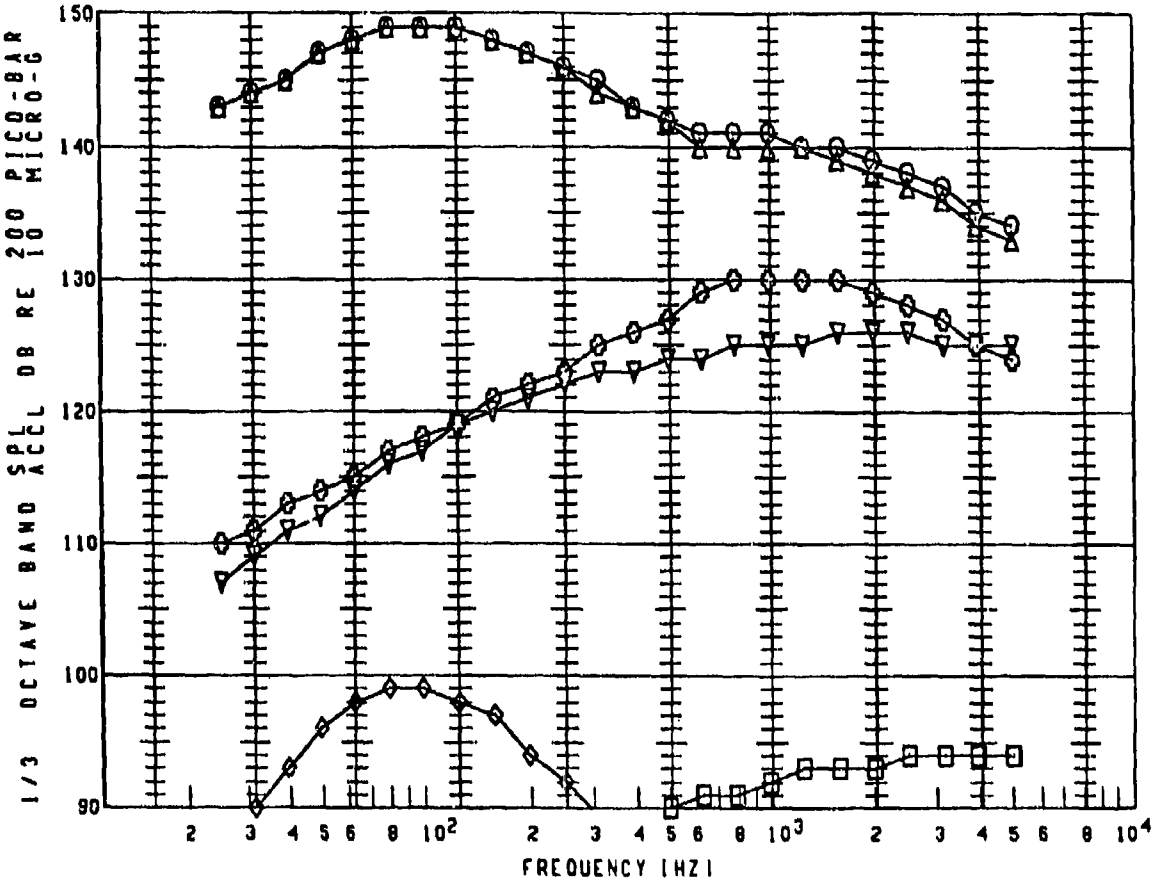
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F04	BKRL						159
▽	F04	BKRL						137
⊡	F04	BKRL						96
◇	F04	BKRL						96
⊙	F04	BKRL						140
△	F04	BKRL						159

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/16.
▽	PREDICTED TBL NOISE	79/03/16.
⊡	PREDICTED SEP NOISE	79/03/16.
◇	PREDICTED EDGE NOISE	79/03/16.
⊙	PREDICTED NN NOISE	79/03/16.
△	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/18/79

PREDICTION FOR OSRA TYPE AIRPLANE, BRAKE RELEASE-INBOARD ENGINE



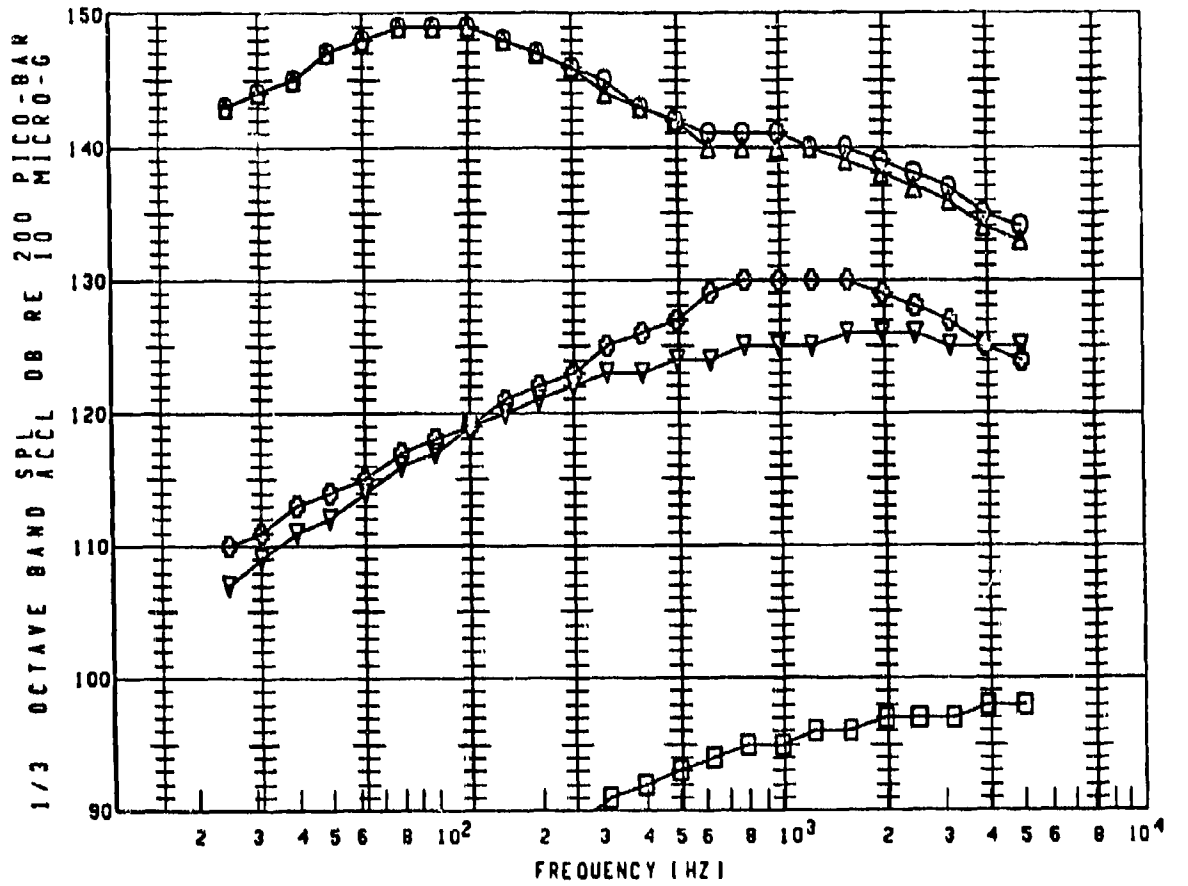
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	N1 [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	F05	BKRL						159
▽	F05	BKRL						137
⊡	F05	BKRL						104
◇	F05	BKRL						107
⊙	F05	BKRL						140
△	F05	BKRL						159

NOTES

⊙	PREDICTED TOTAL NOISE, CREATED	79/03/16.
▽	PREDICTED TBL NOISE	79/03/16.
⊡	PREDICTED SEP NOISE	79/03/16.
◇	PREDICTED EDGE NOISE	79/03/16.
⊙	PREDICTED NN NOISE	79/03/16.
△	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-INBOARD ENGINE



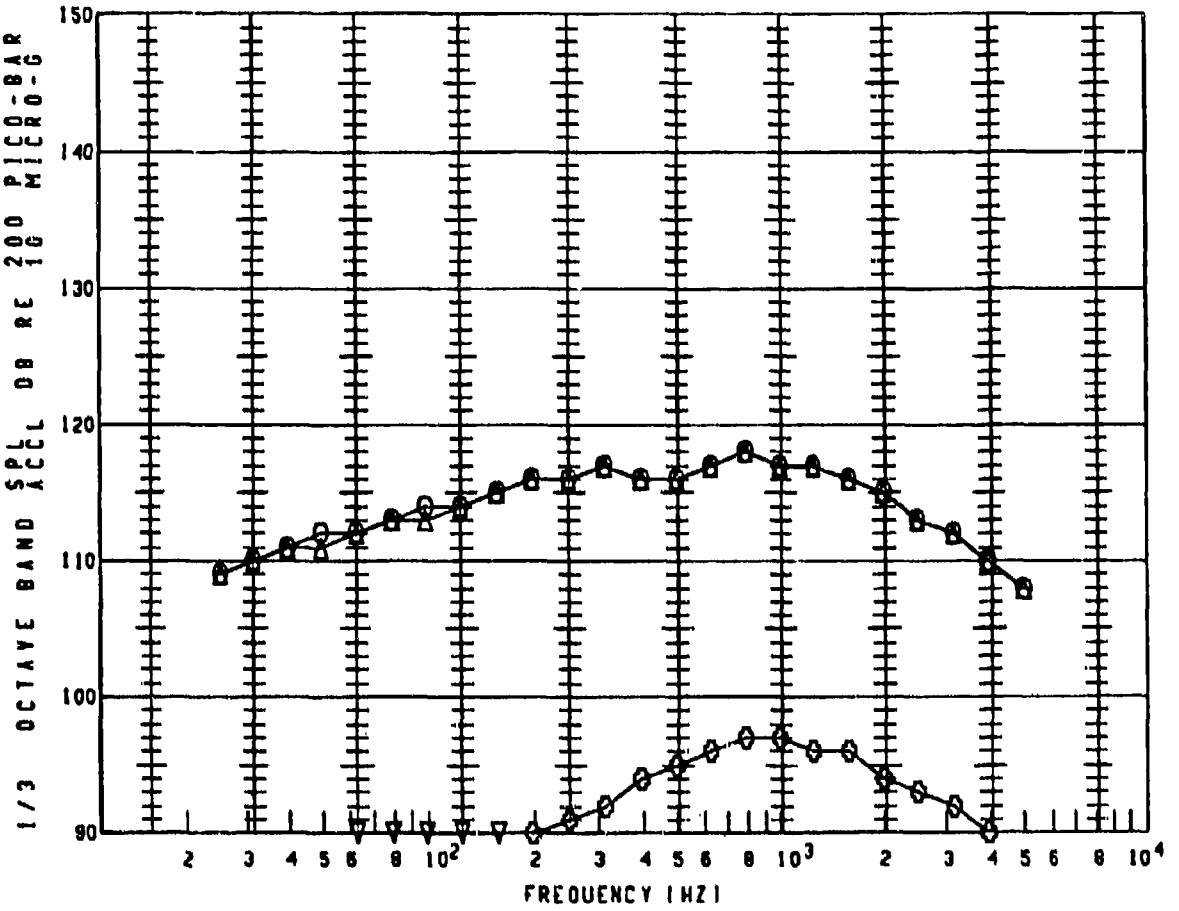
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F06	BKRL						159
▽	F06	BKRL						137
⊡	F06	BKRL						107
◇	F06	BKRL						97
⊗	F06	BKRL						140
△	F06	BKRL						159

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/16.
▽	PREDICTED TBL NOISE	79/03/16.
⊡	PREDICTED SEP NOISE	79/03/16.
◇	PREDICTED EDGE NOISE	79/03/16.
⊗	PREDICTED NN NOISE	79/03/16.
△	PREDICTED MIXING NOISE	79/03/16.

L BUTZEL/ 03/19/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-OUTBOARD ENGINE

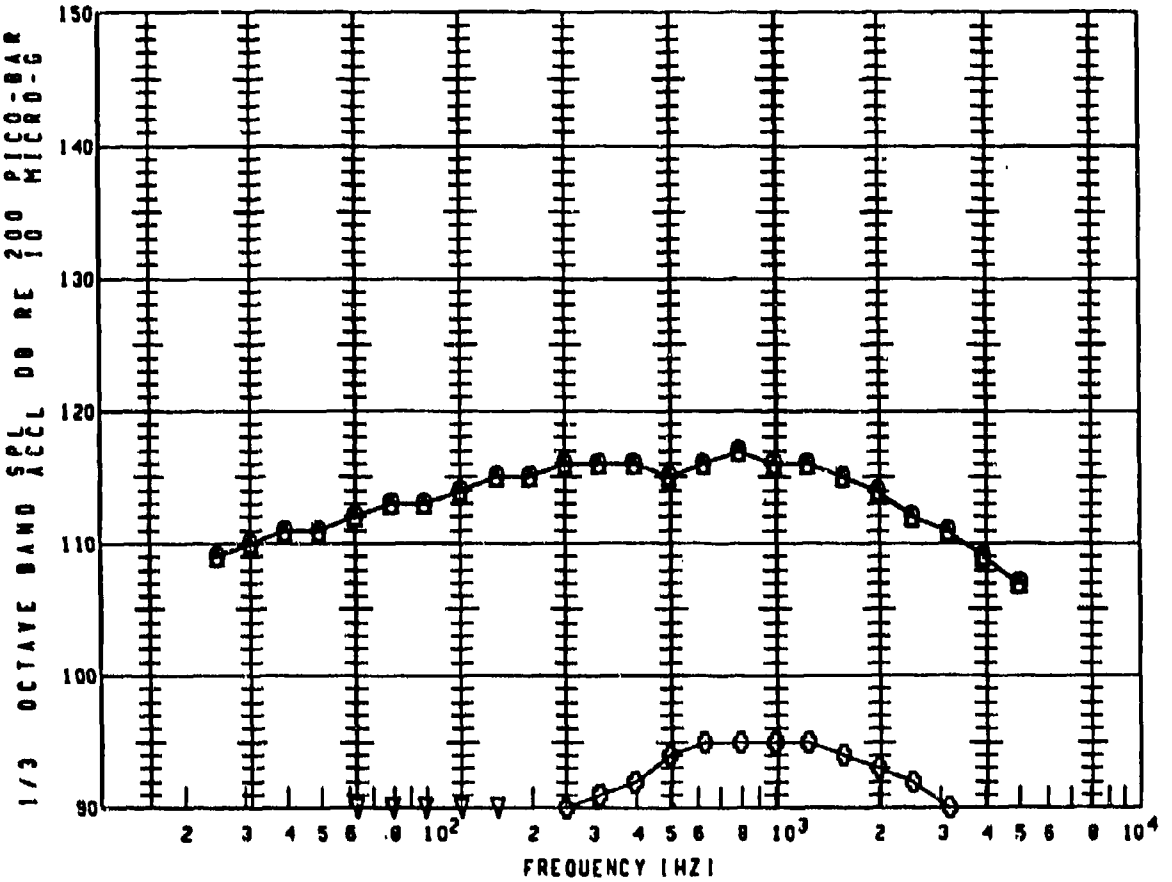


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B01	ST50						129
▽	B01	ST50						102
⊡	B01	ST50						95
◇	B01	ST50						83
⊙	B01	ST50						106
△	B01	ST50						128

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



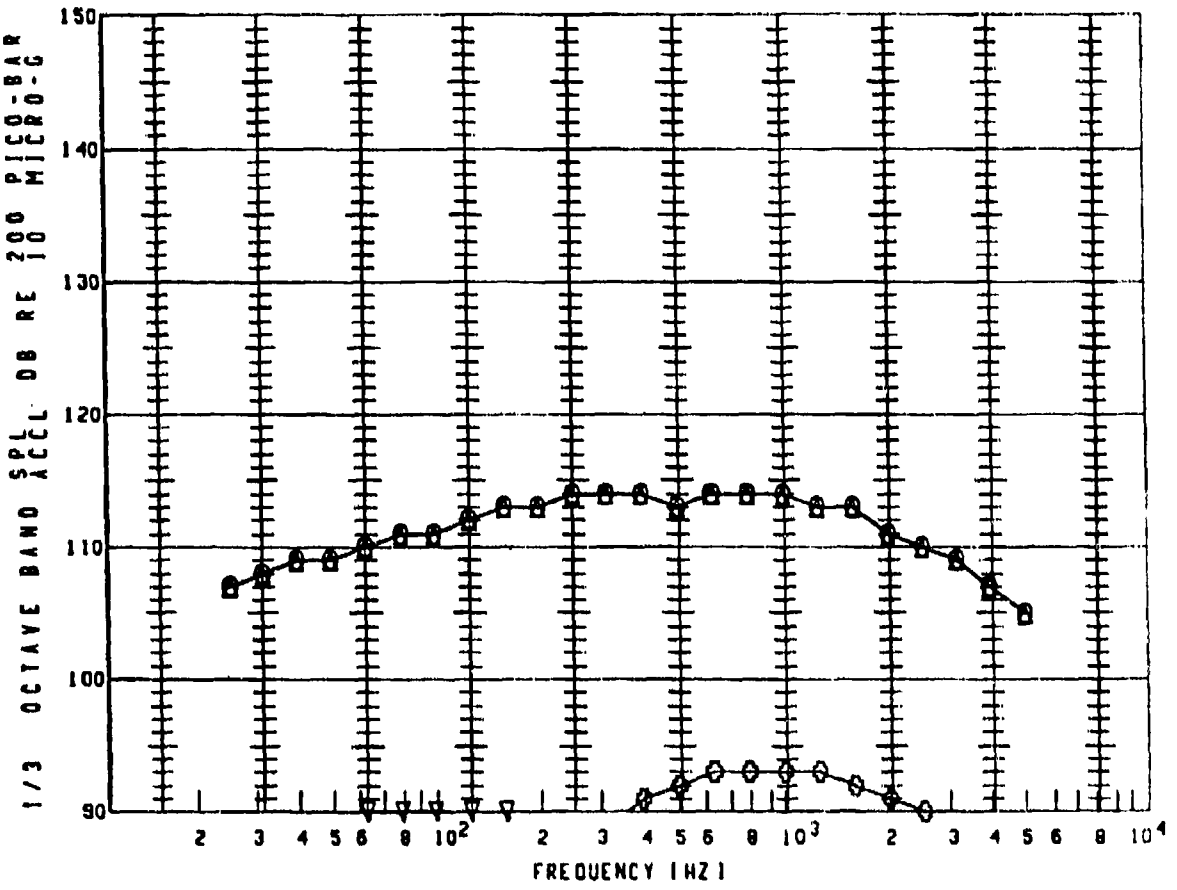
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B02	BKRL						128
▽	B02	BKRL						102
⊡	B02	BKRL						94
◇	B02	BKRL						0
⊛	B02	BKRL						105
△	B02	BKRL						128

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊛	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE

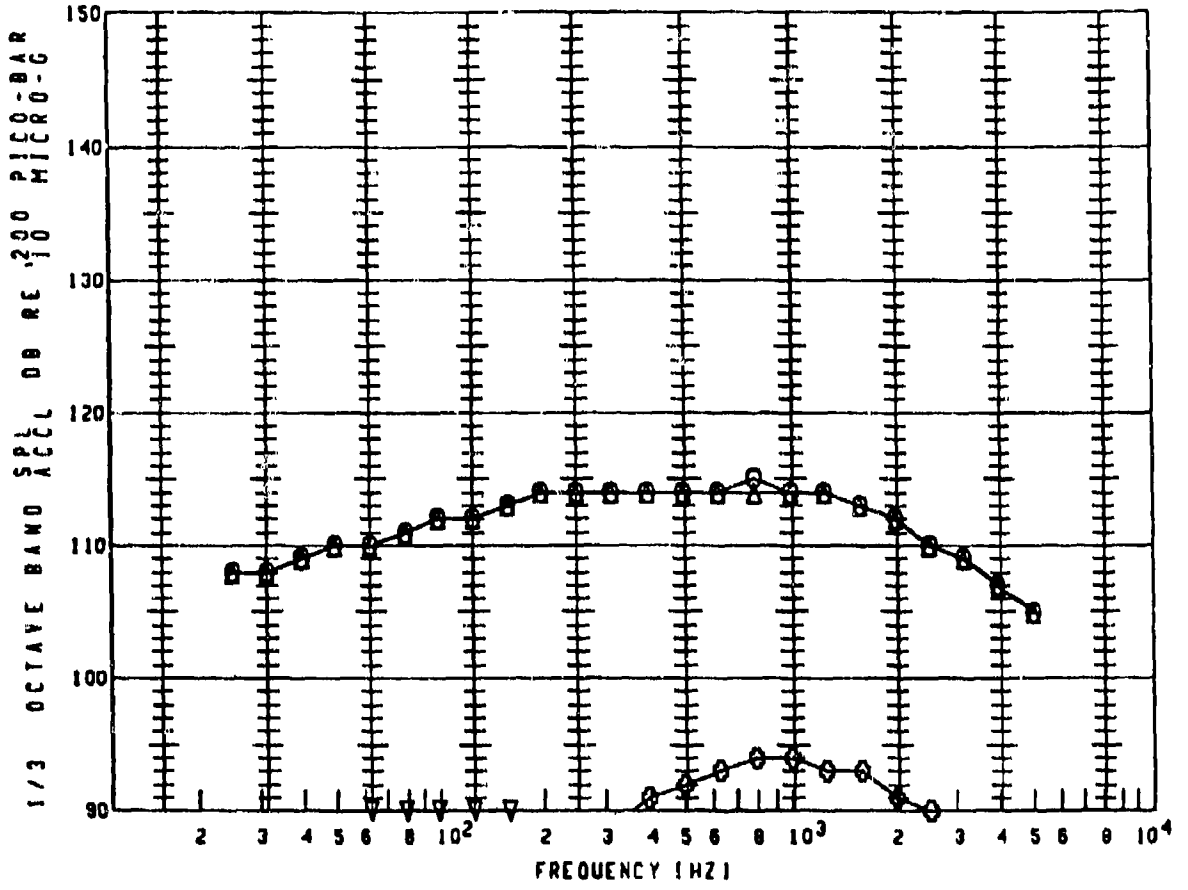


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B03	ST50						126
▽	B03	ST50						102
⊡	B03	ST50						90
◇	B03	ST50						87
⊙	B03	ST50						103
△	B03	ST50						126

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



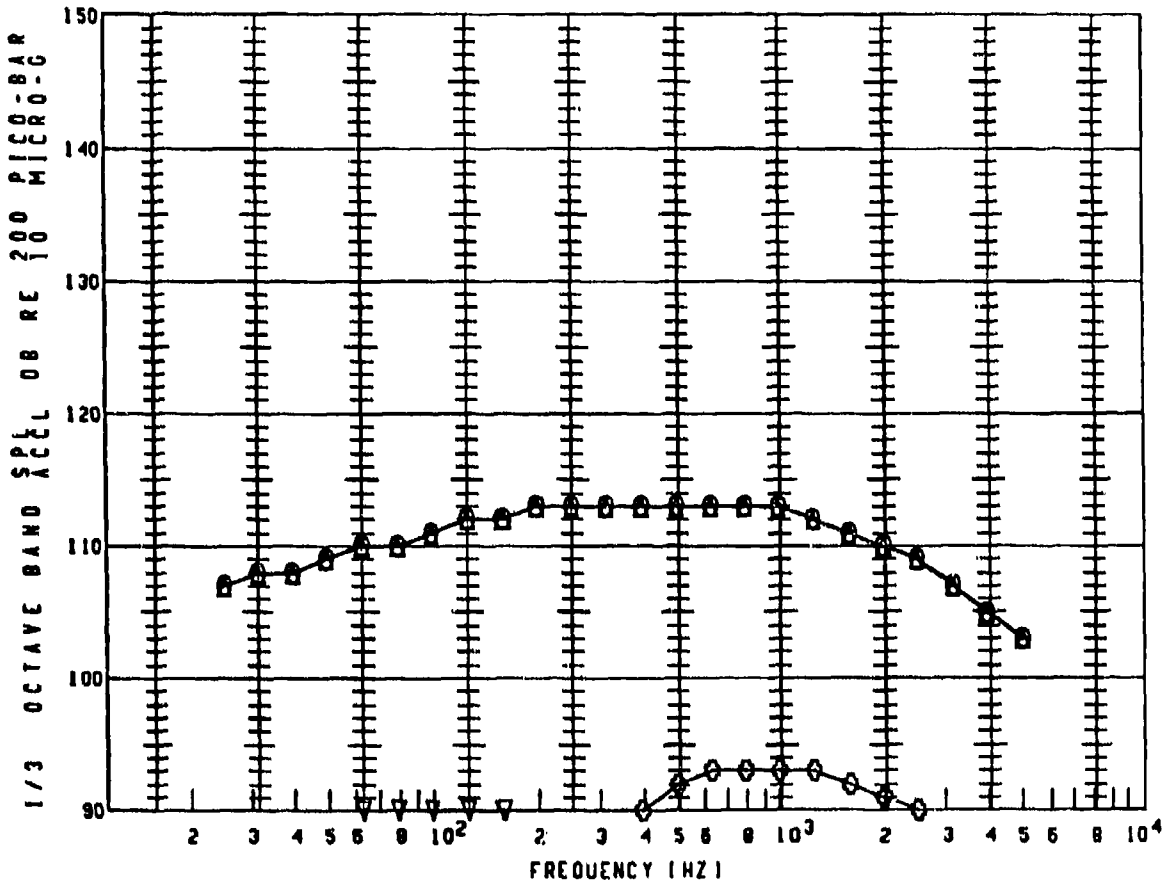
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B04	ST50						126
▽	B04	ST50						101
⊡	B04	ST50						91
◇	B04	ST50						93
⊙	B04	ST50						103
△	B04	ST50						126

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-OUTBOARD ENGINE

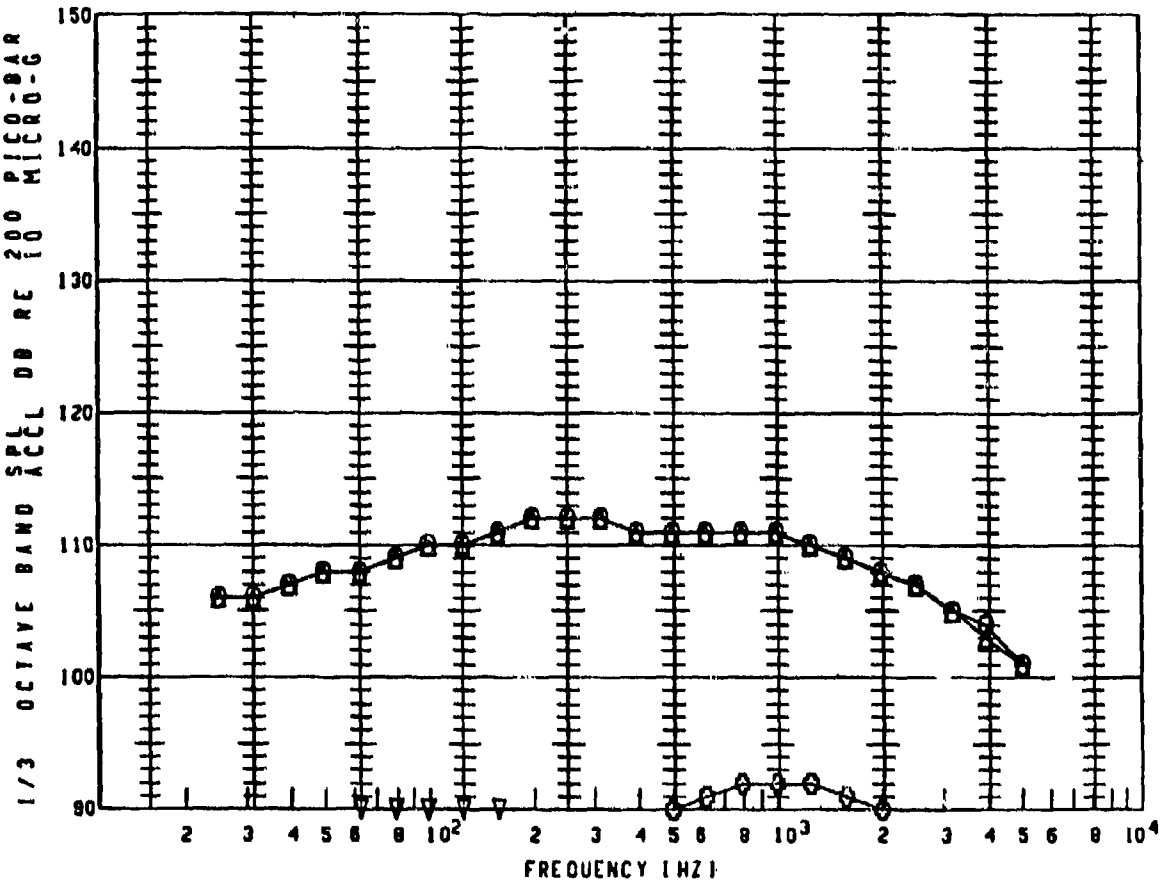


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B05	ST50						125
▽	B05	ST50						101
⊡	B05	ST50						90
◇	B05	ST50						89
⊙	B05	ST50						103
△	B05	ST50						125

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



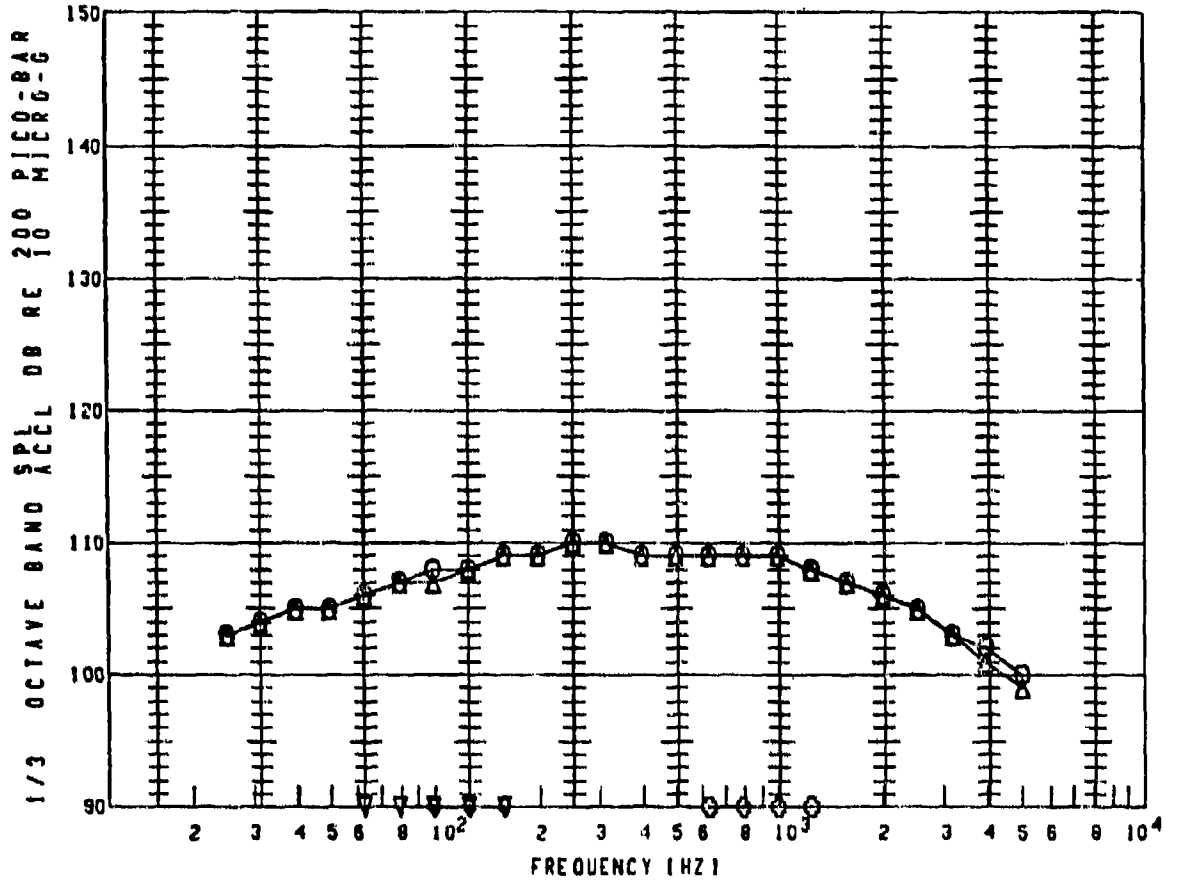
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B06	ST50						123
▽	B06	ST50						101
⊡	B06	ST50						87
◇	B06	ST50						0
⊙	B06	ST50						101
△	B06	ST50						123

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-OUTBOARD ENGINE



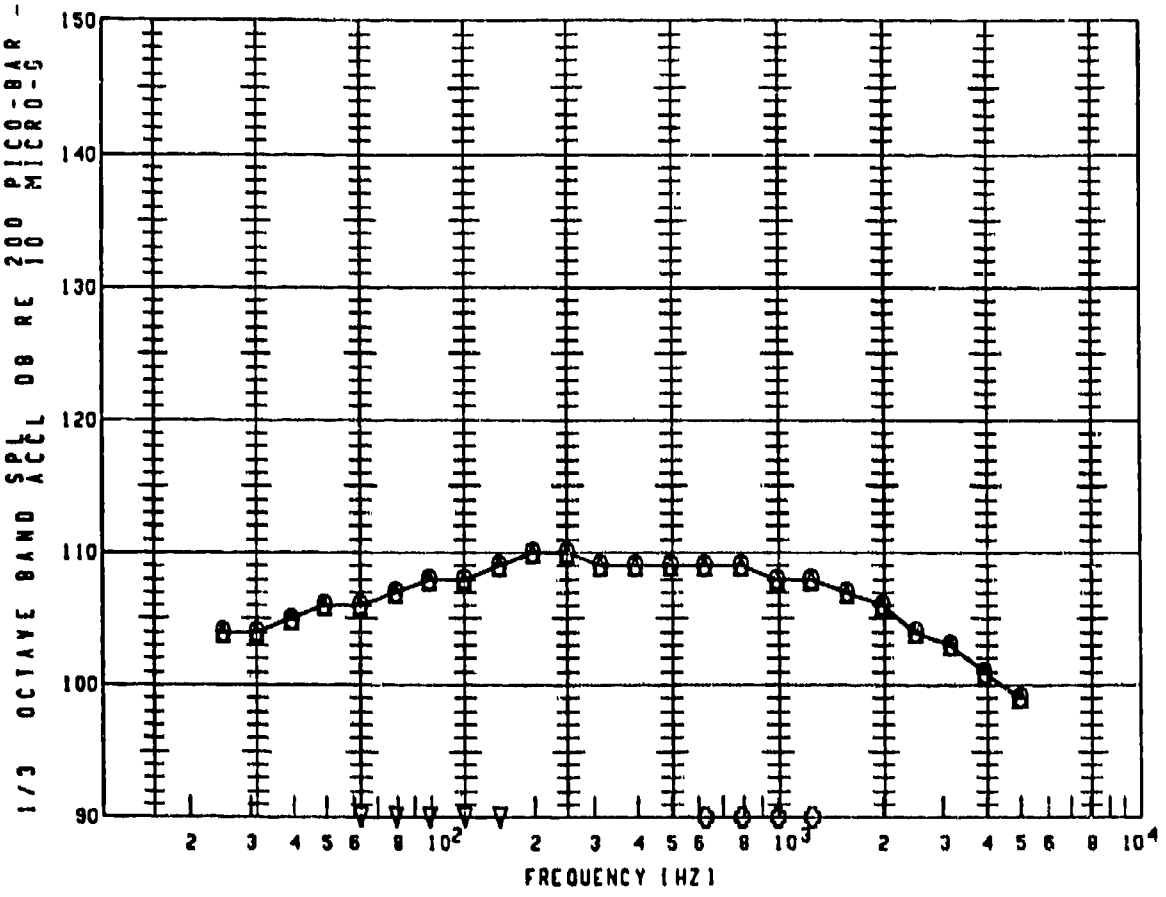
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	807	ST50						121
▽	807	ST50						101
⊡	807	ST50						82
◇	807	ST50						98
⊙	807	ST50						100
△	807	ST50						121

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



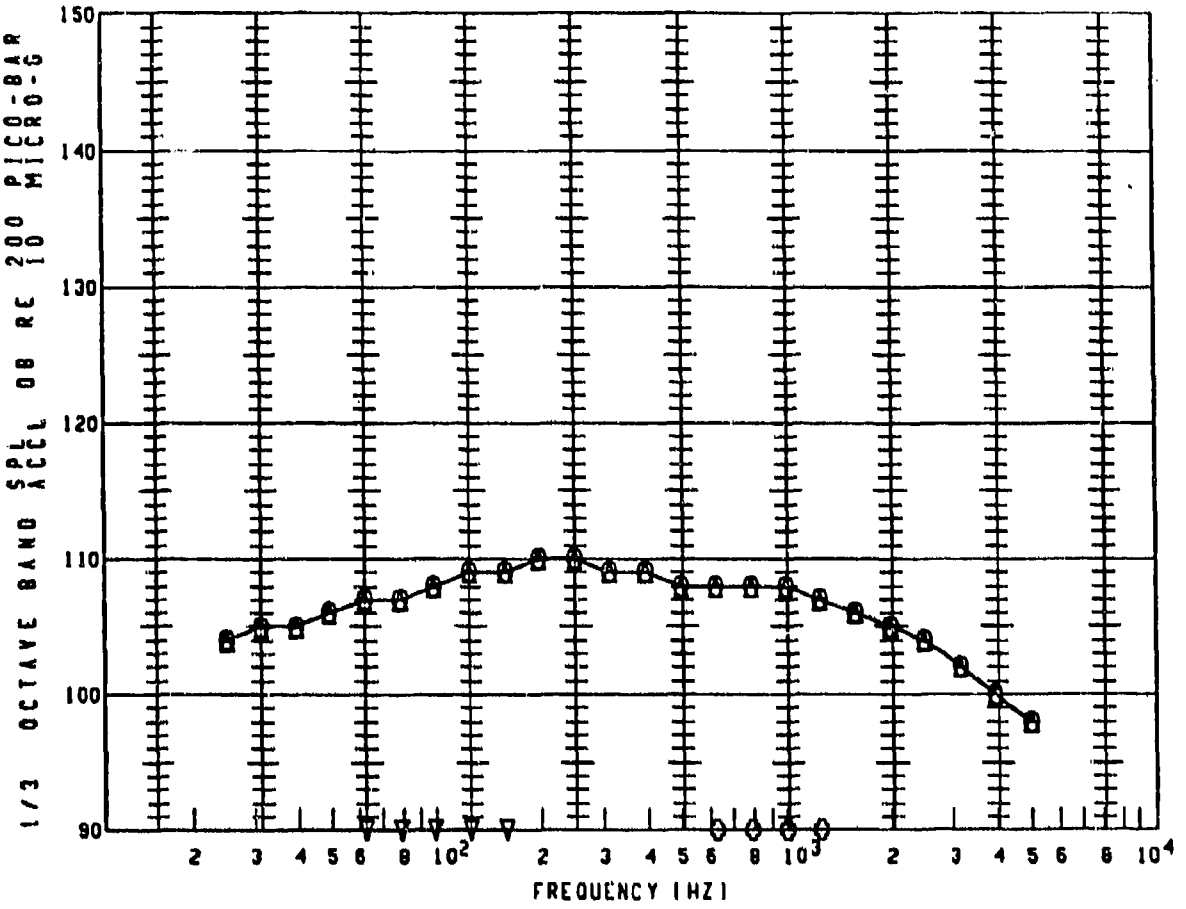
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B08	ST50						121
▽	B08	ST50						101
⊡	B08	ST50						81
◇	B08	ST50						95
⊗	B08	ST50						100
△	B08	ST50						121

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊗	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE

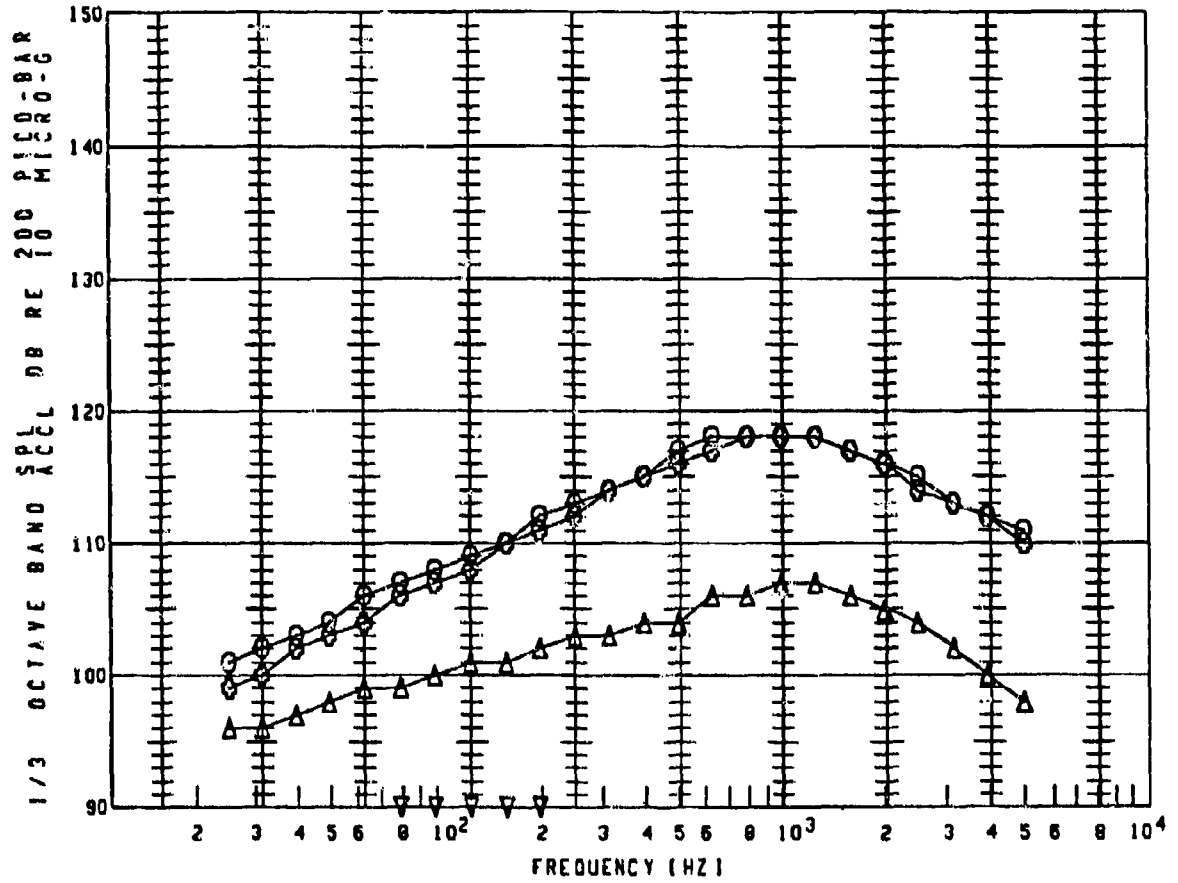


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	809	ST50						121
▽	809	ST50						101
⊡	809	ST50						0
◇	809	ST50						90
⊙	809	ST50						100
△	809	ST50						121

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-OUTBOARD ENGINE



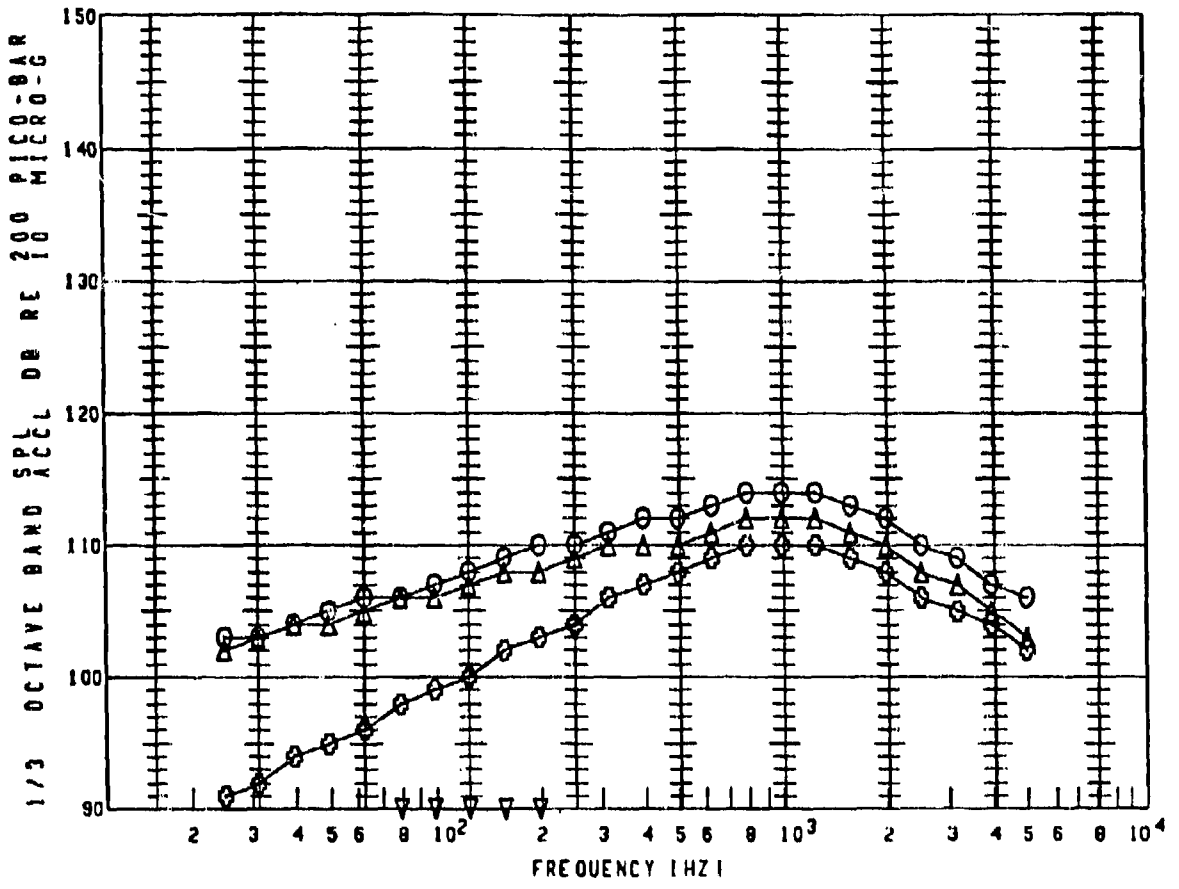
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	(RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	V01	ST50						128
▽	V01	ST50						102
⊡	V01	ST50						92
◇	V01	ST50						0
⬡	V01	ST50						127
△	V01	ST50						117

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⬡	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



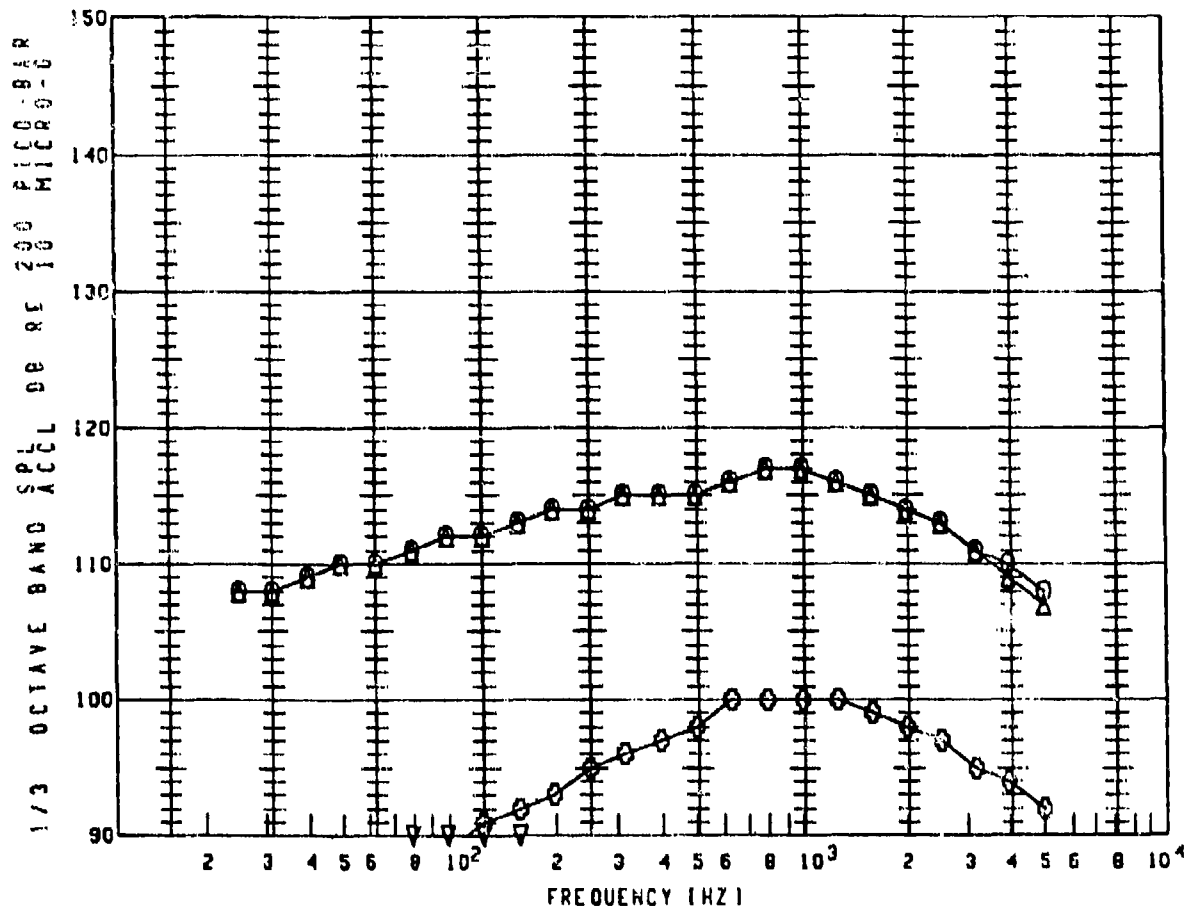
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	V02	ST50						124
▽	V02	ST50						102
⊡	V02	ST50						98
◇	V02	ST50						83
⊙	V02	ST50						119
△	V02	ST50						122

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



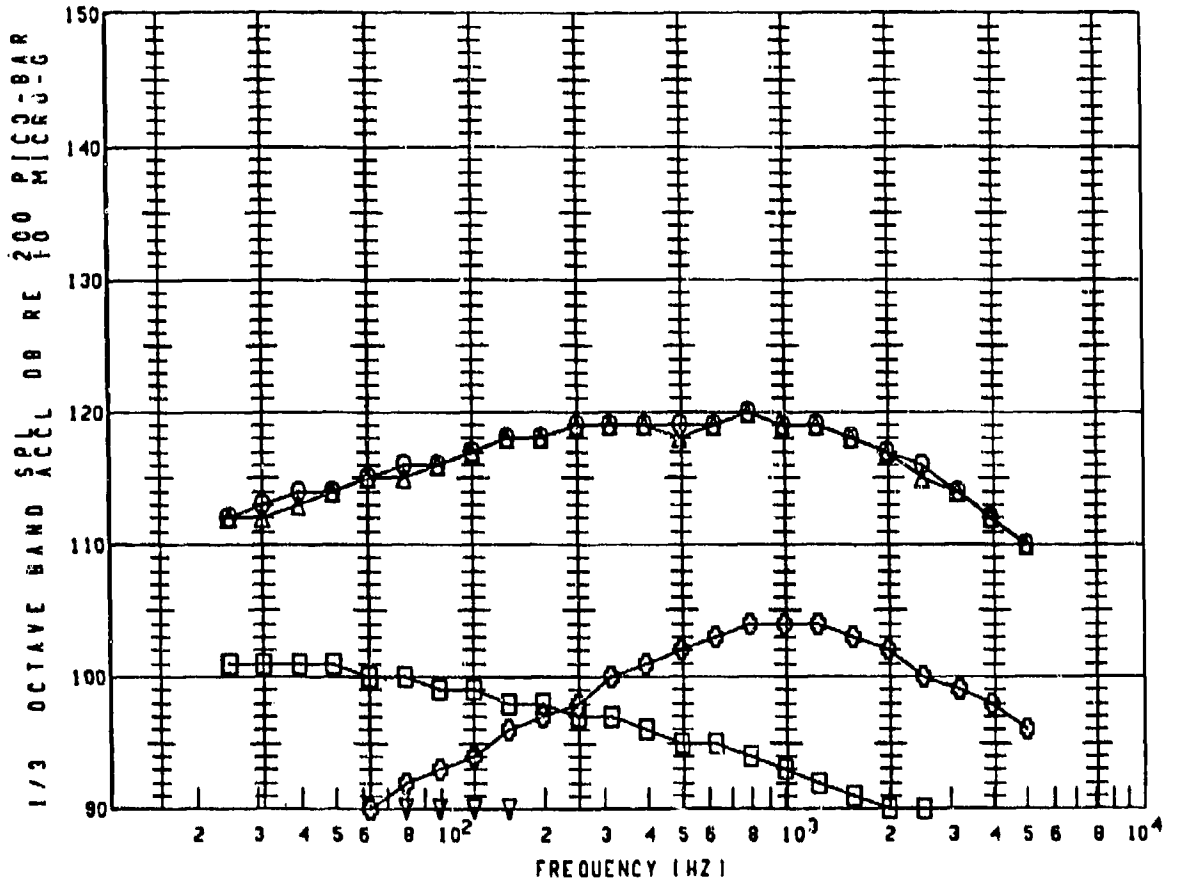
PLOT SYMBOL	X-DUCER NO	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F01	ST50						127
▽	F01	ST50						102
⊡	F01	ST50						94
◇	F01	ST50						88
⊙	F01	ST50						110
△	F01	ST50						127

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



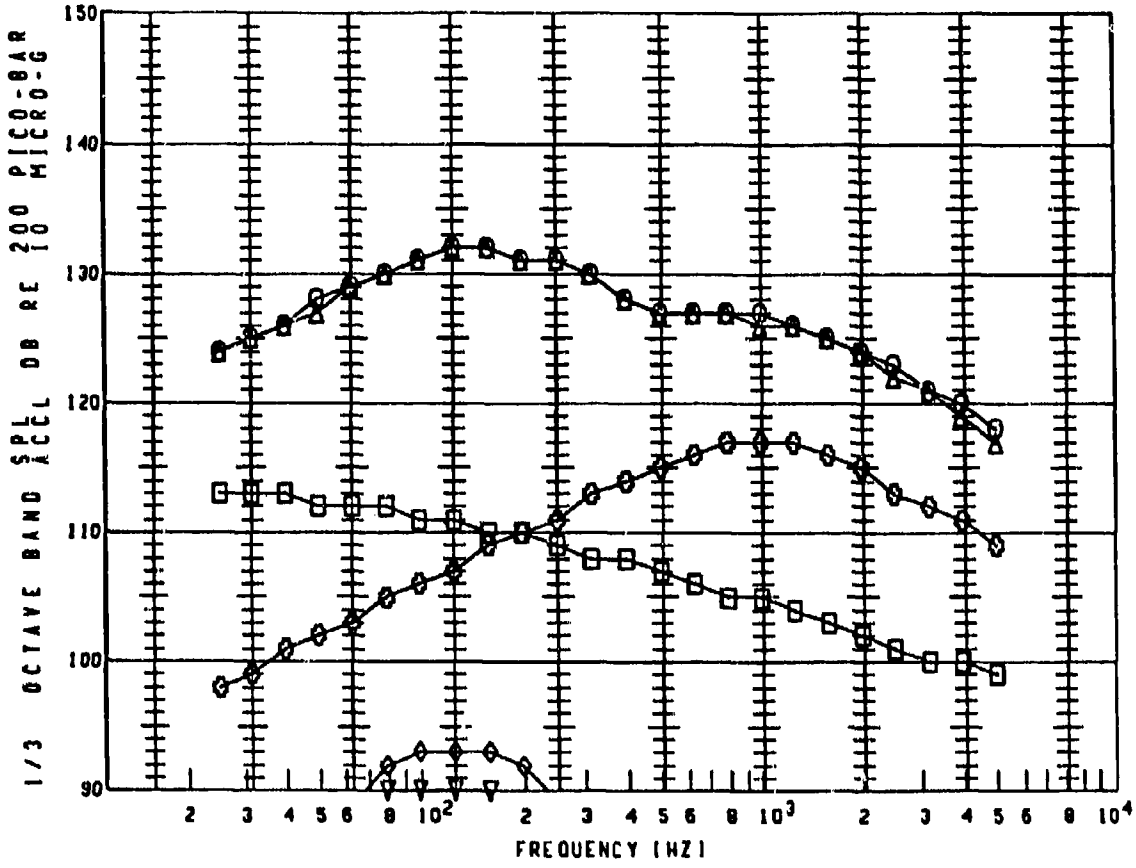
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F02	ST50						131
▽	F02	ST50						102
⊡	F02	ST50						111
◇	F02	ST50						93
⊙	F02	ST50						113
△	F02	ST50						131

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 09/22/78

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



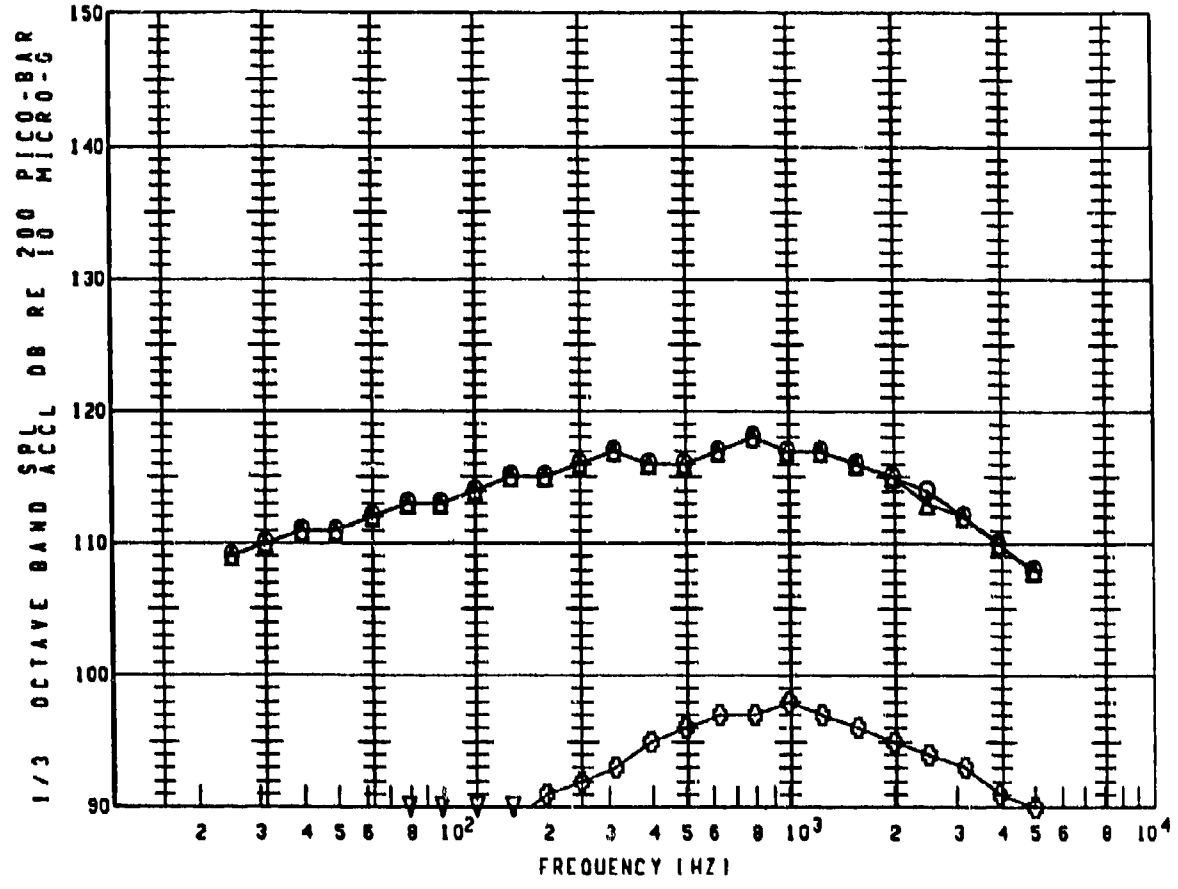
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F03	ST50						142
▽	F03	ST50						102
⊡	F03	ST50						123
◇	F03	ST50						101
⊙	F03	S150						126
△	F03	ST50						142

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE



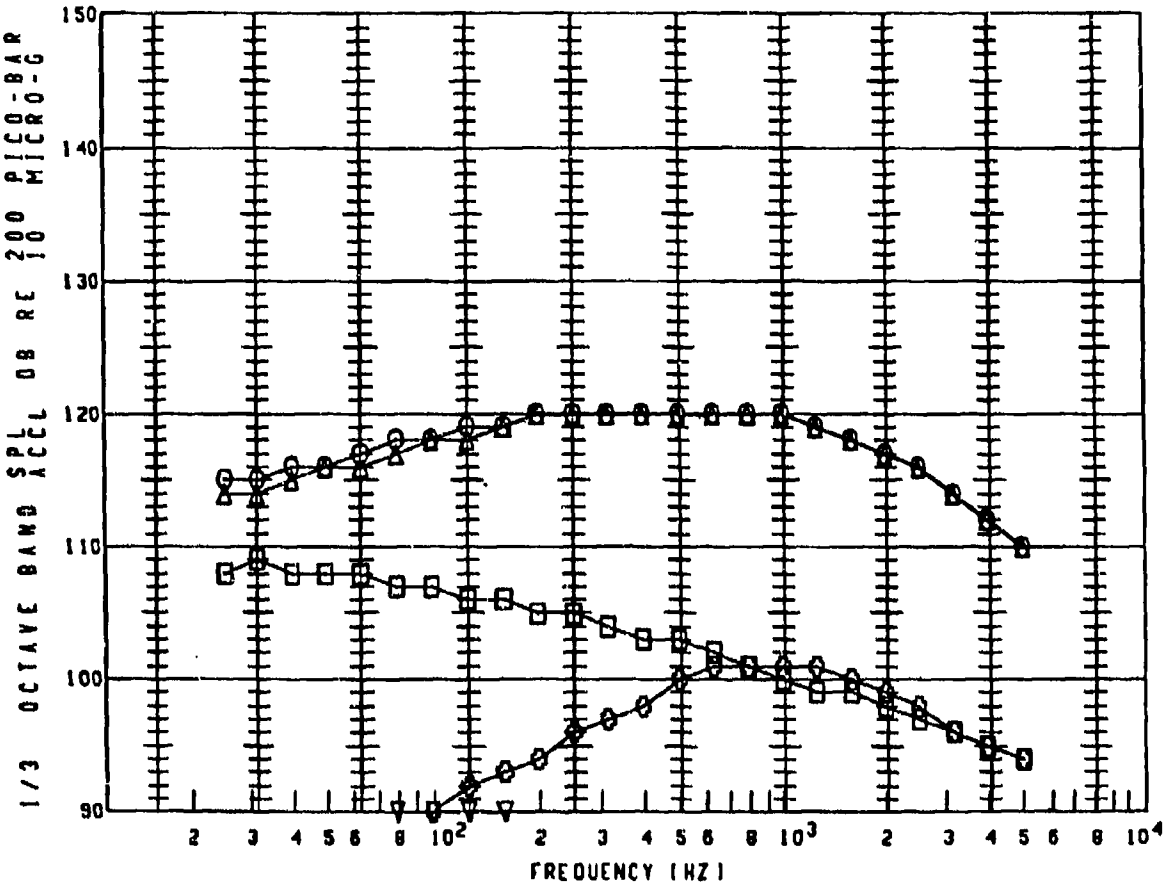
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F04	ST50						128
▽	F04	ST50						102
⊡	F04	ST50						97
◇	F04	ST50						77
⊙	F04	ST50						107
△	F04	ST50						128

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZELL 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.USB=50-OUTBOARD ENGINE

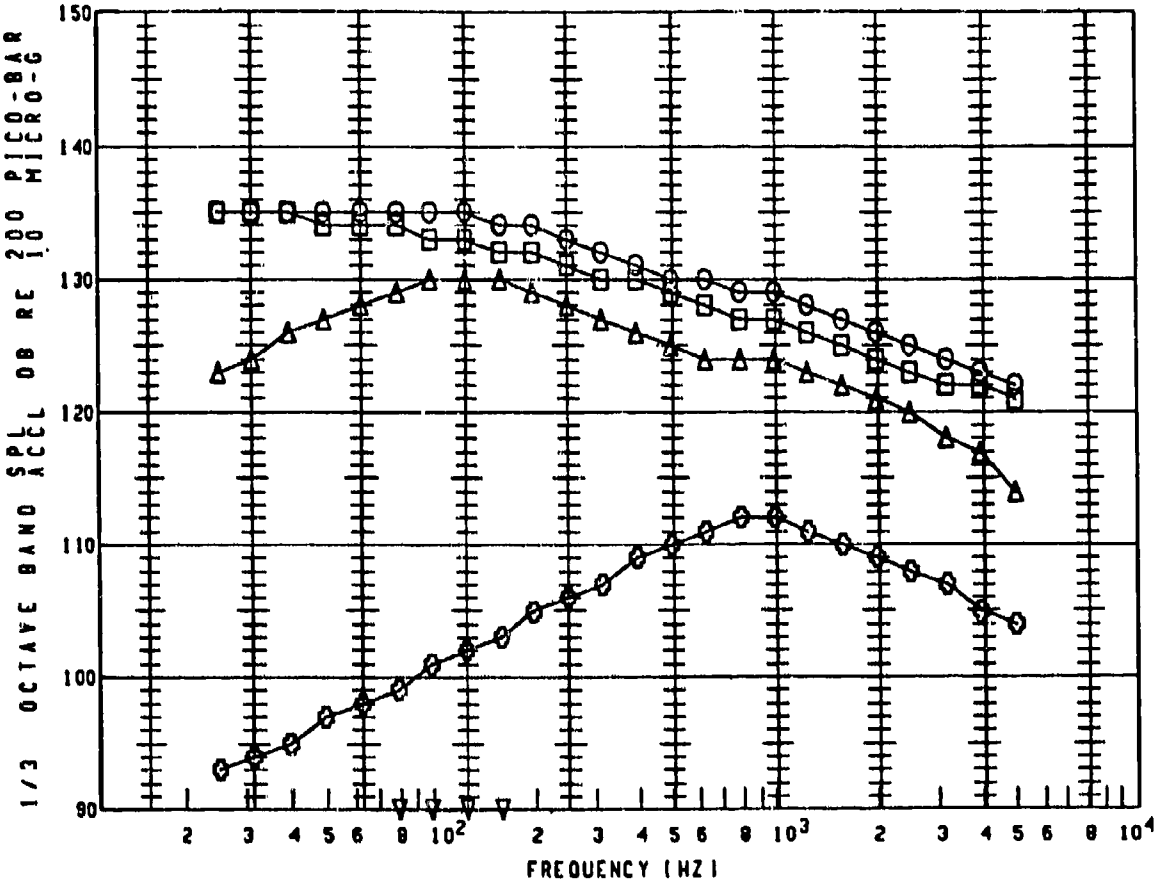


PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F05	ST50						132
▽	F05	ST50						102
⊡	F05	ST50						119
◇	F05	ST50						83
⊙	F05	ST50						111
△	F05	ST50						132

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

PREDICTION FOR OSRA TYPE AIRPLANE,USB=50-OUTBOARD ENGINE



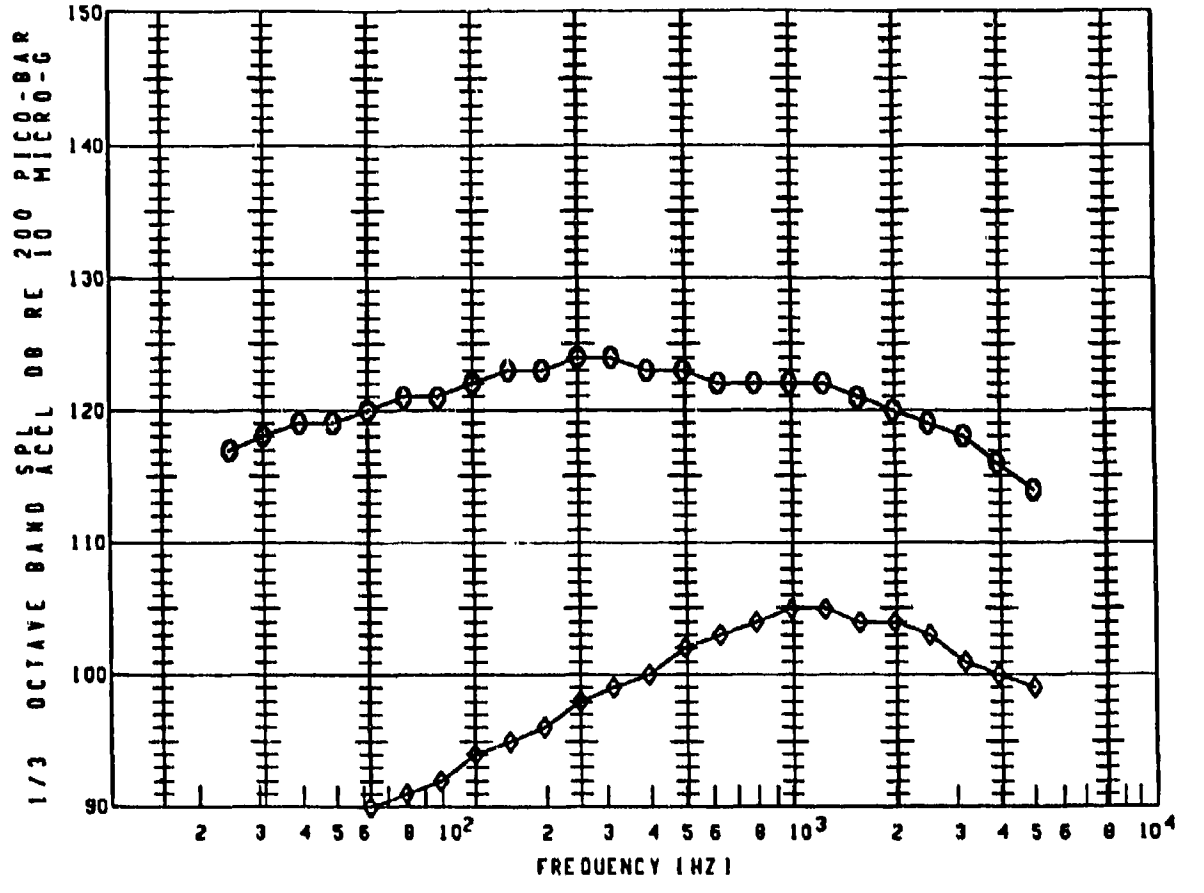
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F06	ST50						146
▽	F06	ST50						102
⊡	F06	ST50						145
◇	F06	ST50						93
⊙	F06	ST50						121
△	F06	ST50						140

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED TBL NOISE	79/03/22.
⊡	PREDICTED SEP NOISE	79/03/22.
◇	PREDICTED EDGE NOISE	79/03/22.
⊙	PREDICTED NN NOISE	79/03/22.
△	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



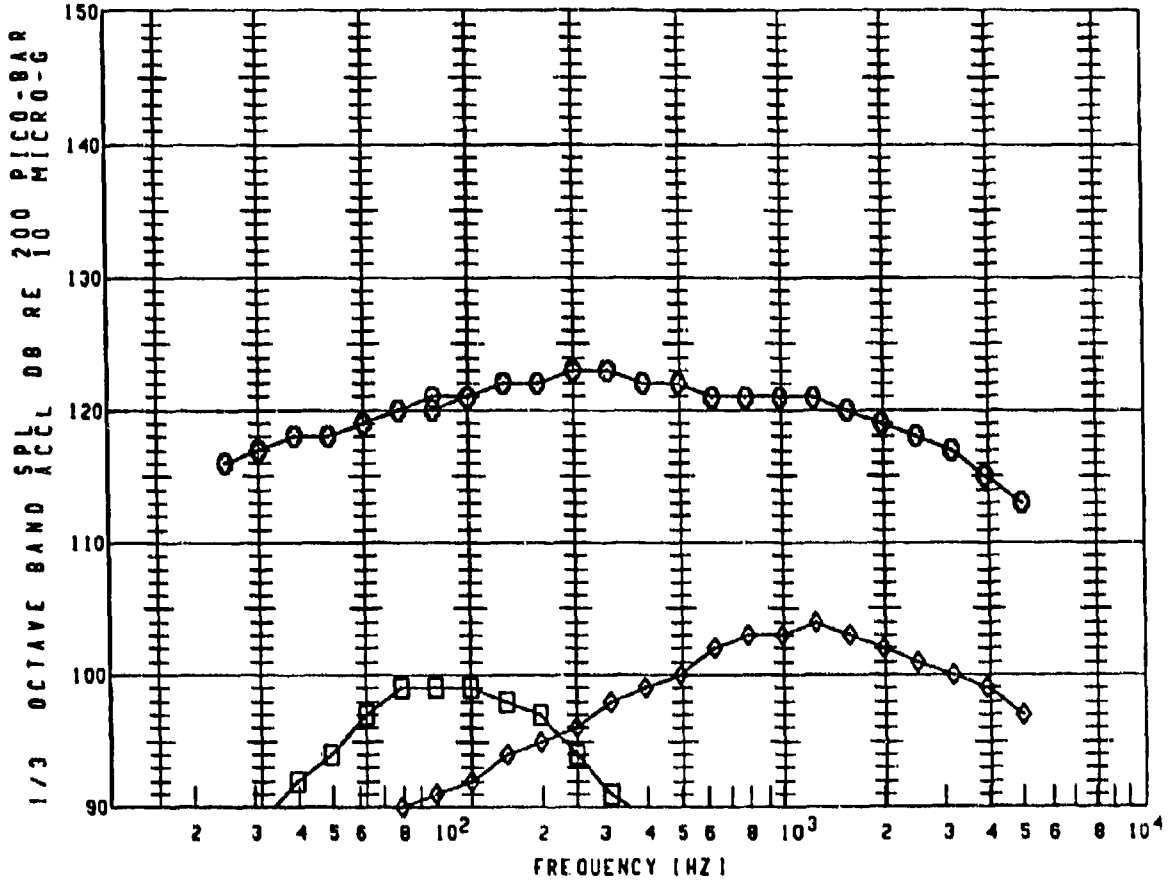
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	801	BKRL						135
▽	801	BKRL						0
□	801	BKRL						0
◇	801	BKRL						114
⊙	801	BKRL						135

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
□	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



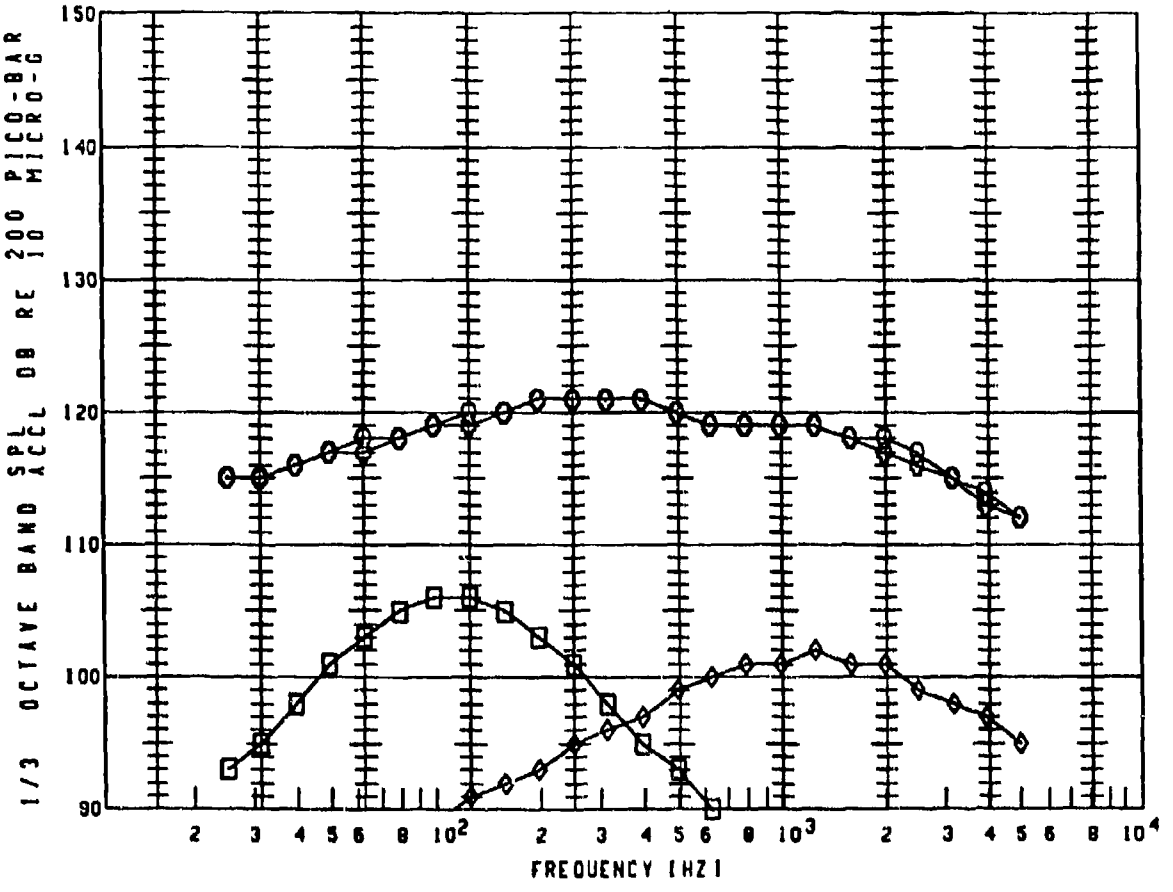
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	N1 [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	B02	BKRL						134
▽	B02	BKRL						0
⊡	B02	BKRL						107
◇	B02	BKRL						113
◈	B02	BKRL						134

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
◈	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE,BRAKE RELEASE-OUTBOARD ENGINE



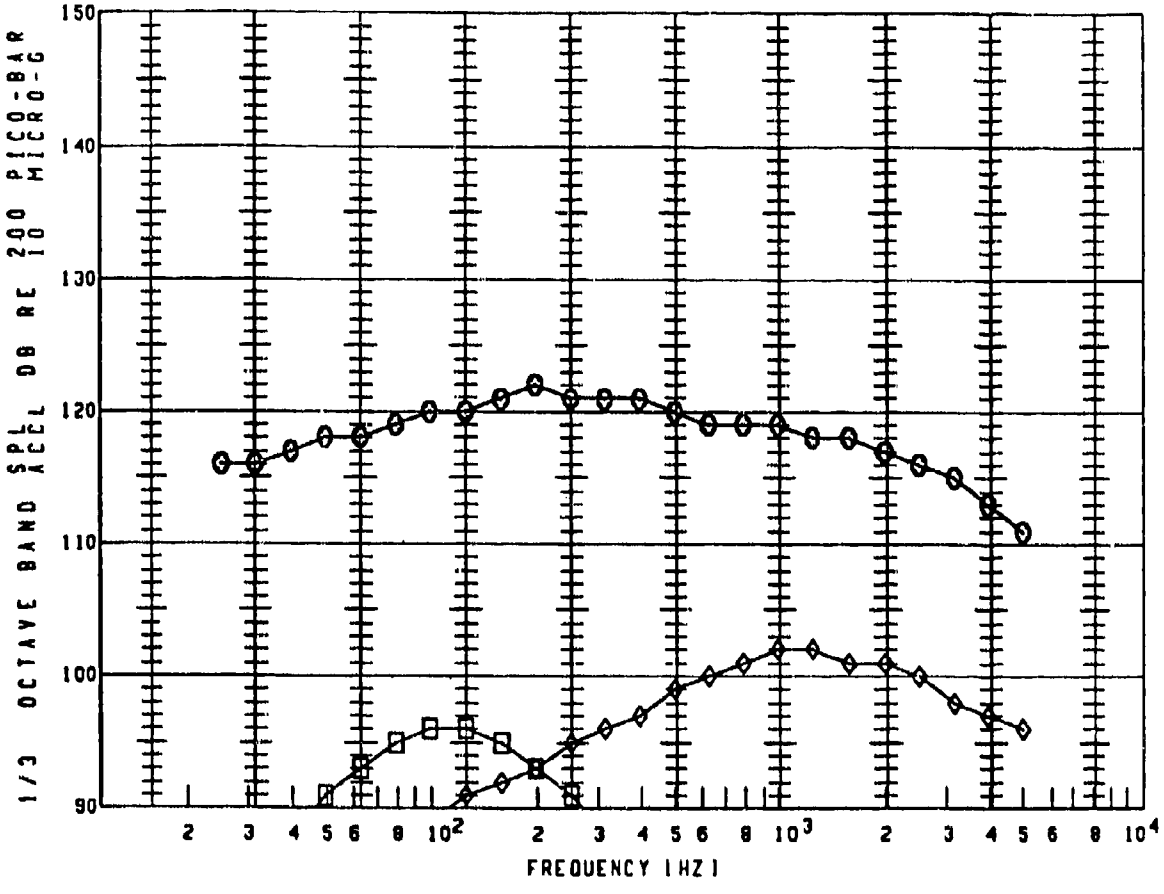
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B03	BKRL						132
▽	B03	BKRL						0
⊡	B03	BKRL						114
◇	B03	BKRL						111
⊙	B03	BKRL						132

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



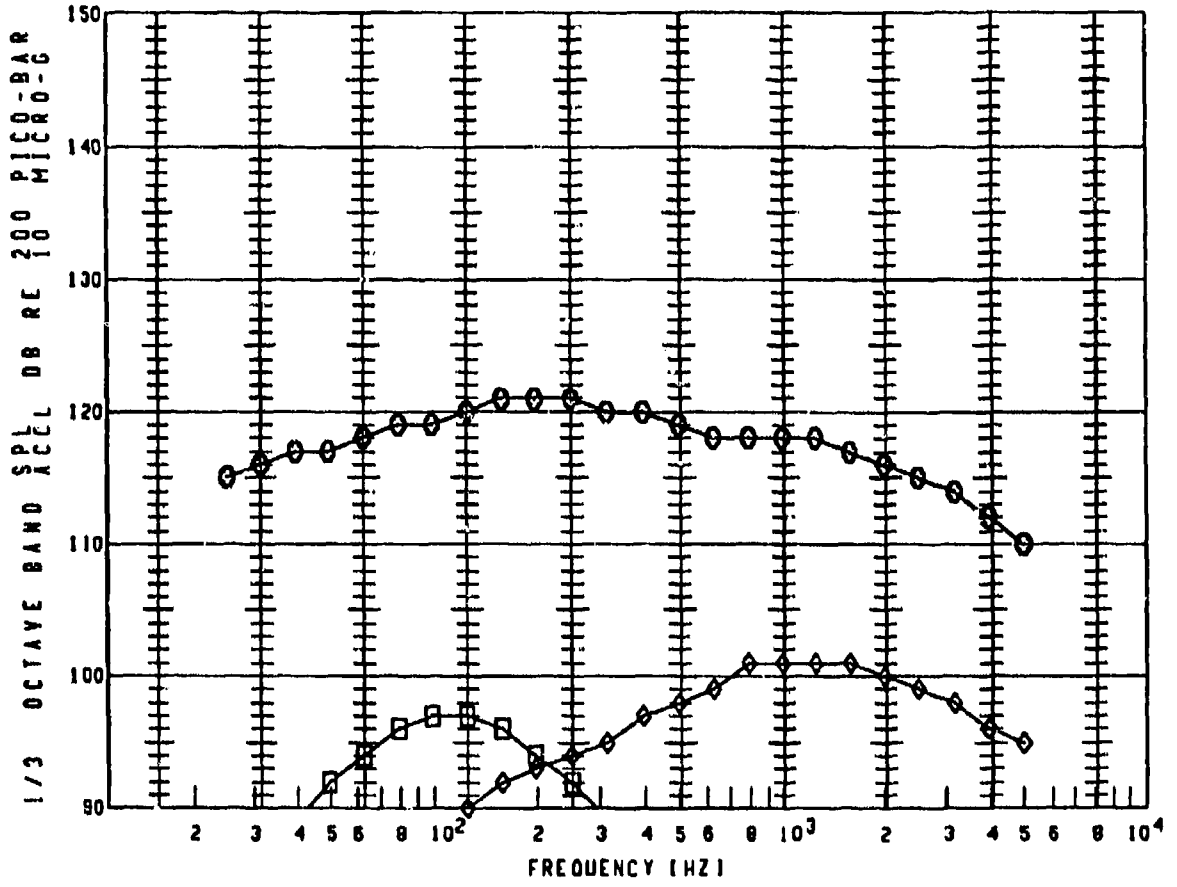
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	804	BKRL						133
▽	804	BKRL						0
⊡	804	BKRL						104
◇	804	BKRL						111
⊙	804	BKRL						133

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



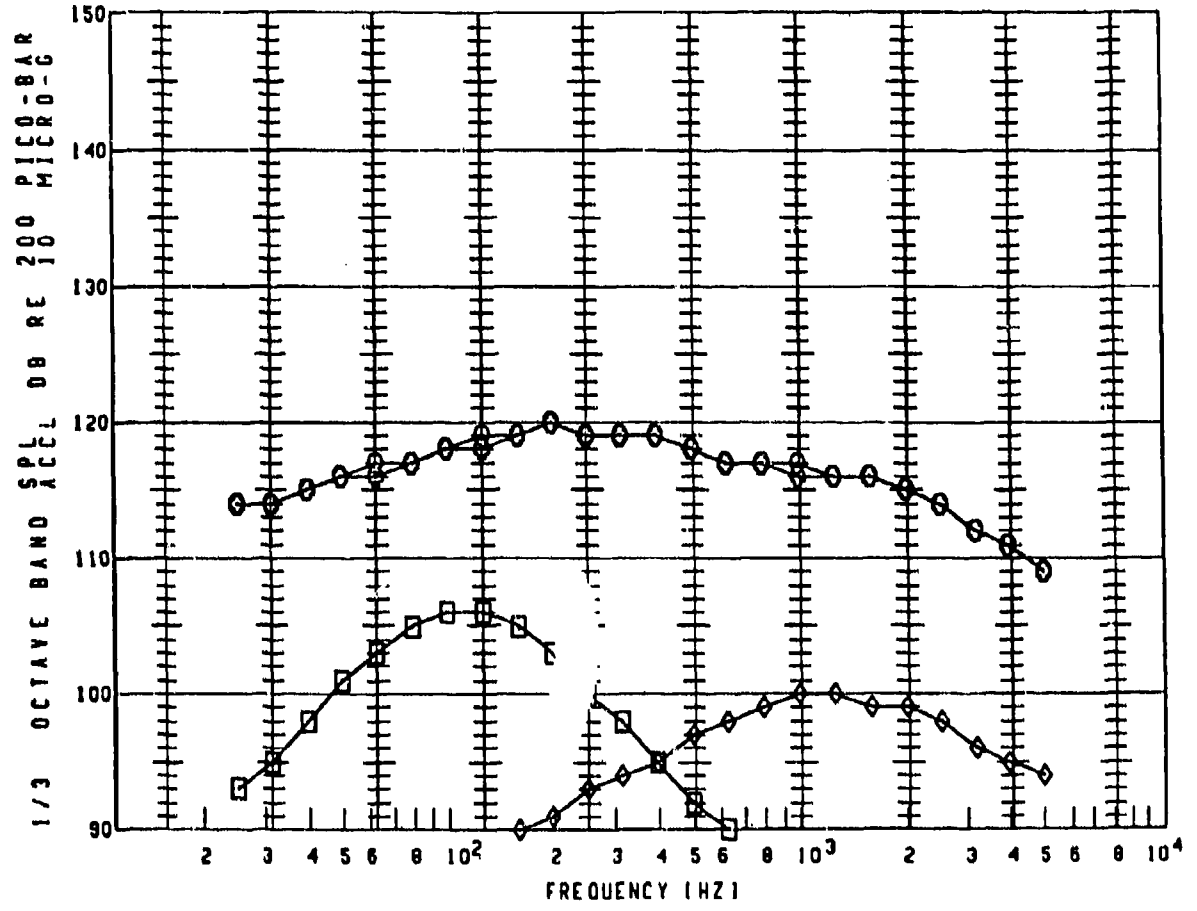
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	BOS	BKRL						132
▽	BOS	BKRL						0
⊡	BOS	BKRL						105
◇	BOS	BKRL						111
⊙	BOS	BKRL						132

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



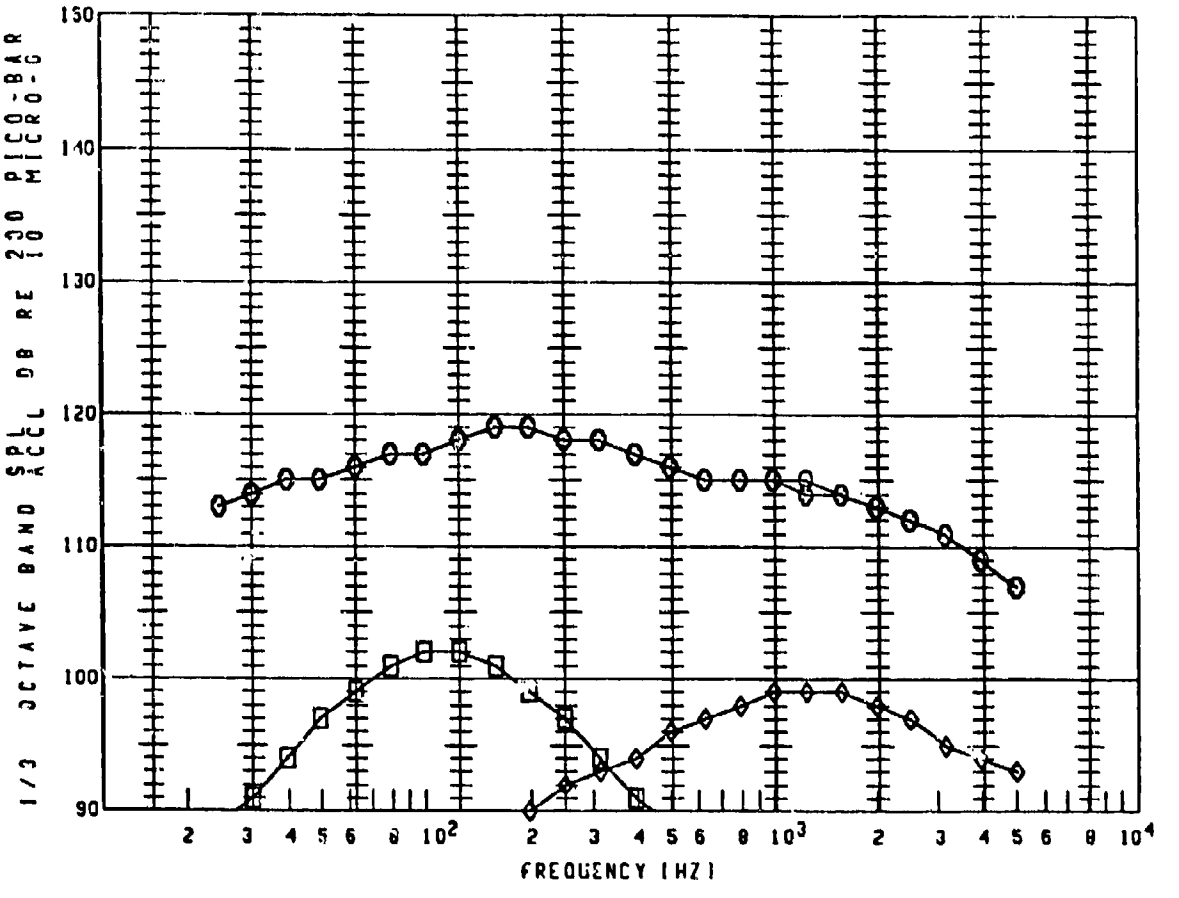
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	B06	BKRL						131
▽	B06	BKRL						0
⊡	B06	BKRL						114
◇	B06	BKRL						109
⊙	B06	BKRL						131

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE,BRAKE RELEASE-OUTBOARD ENGINE



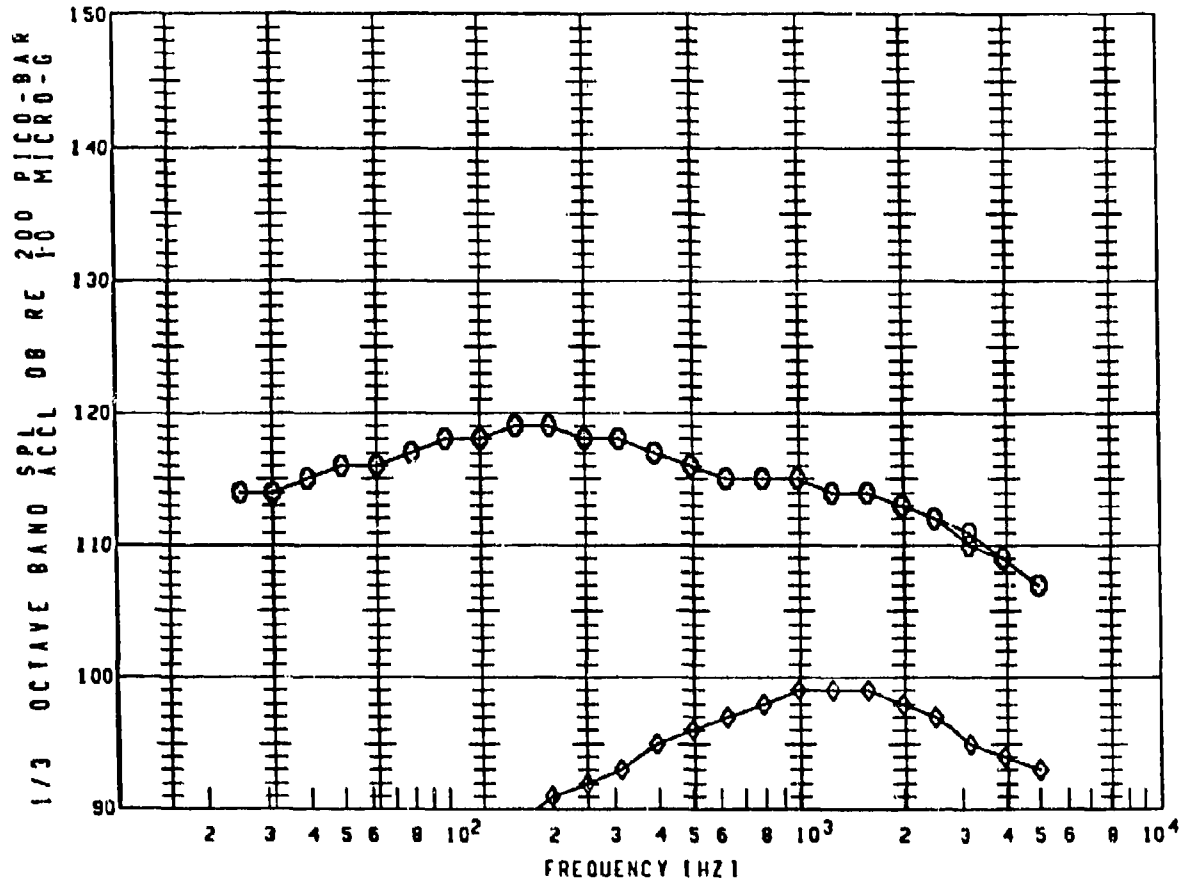
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	NI [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	B07	BKRL						130
▽	B07	BKRL						0
⊡	B07	BKRL						110
◇	B07	BKRL						108
⊙	B07	BKRL						130

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



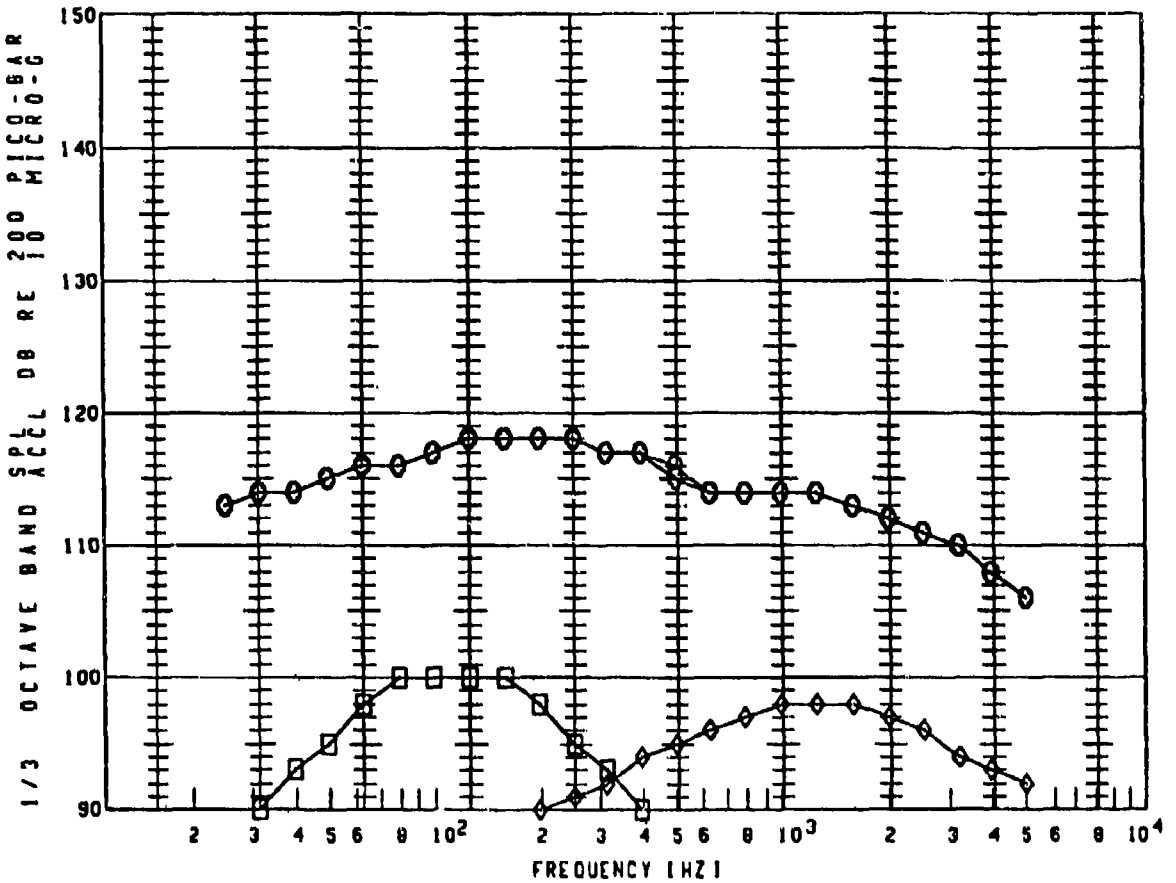
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	808	BKRL						130
▽	808	BKRL						0
⊡	808	BKRL						82
◇	808	BKRL						108
⊙	808	BKRL						130

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



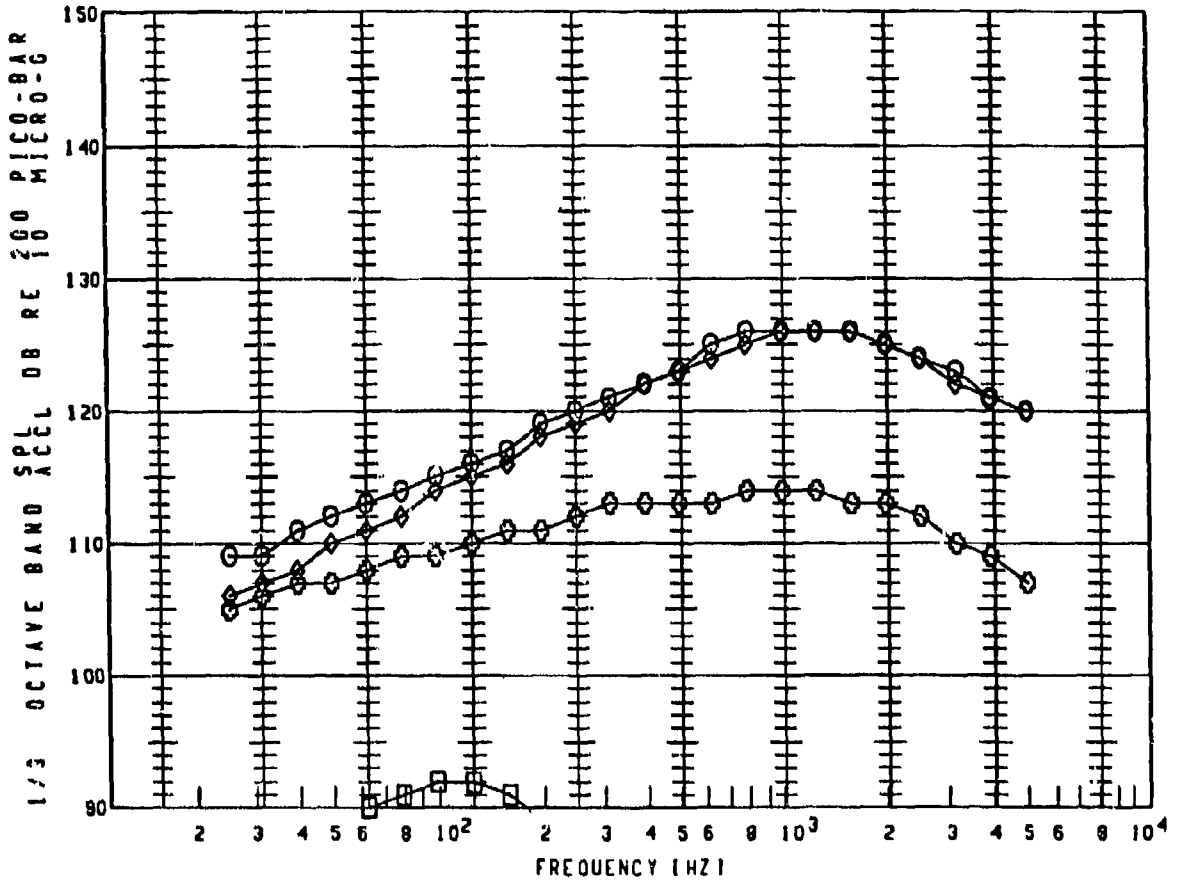
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	N1 [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	809	BKRL						129
▽	809	BKRL						0
⊡	809	BKRL						108
◇	809	BKRL						107
⊙	809	BKRL						129

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE,BRAKE RELEASE-OUTBOARD ENGINE



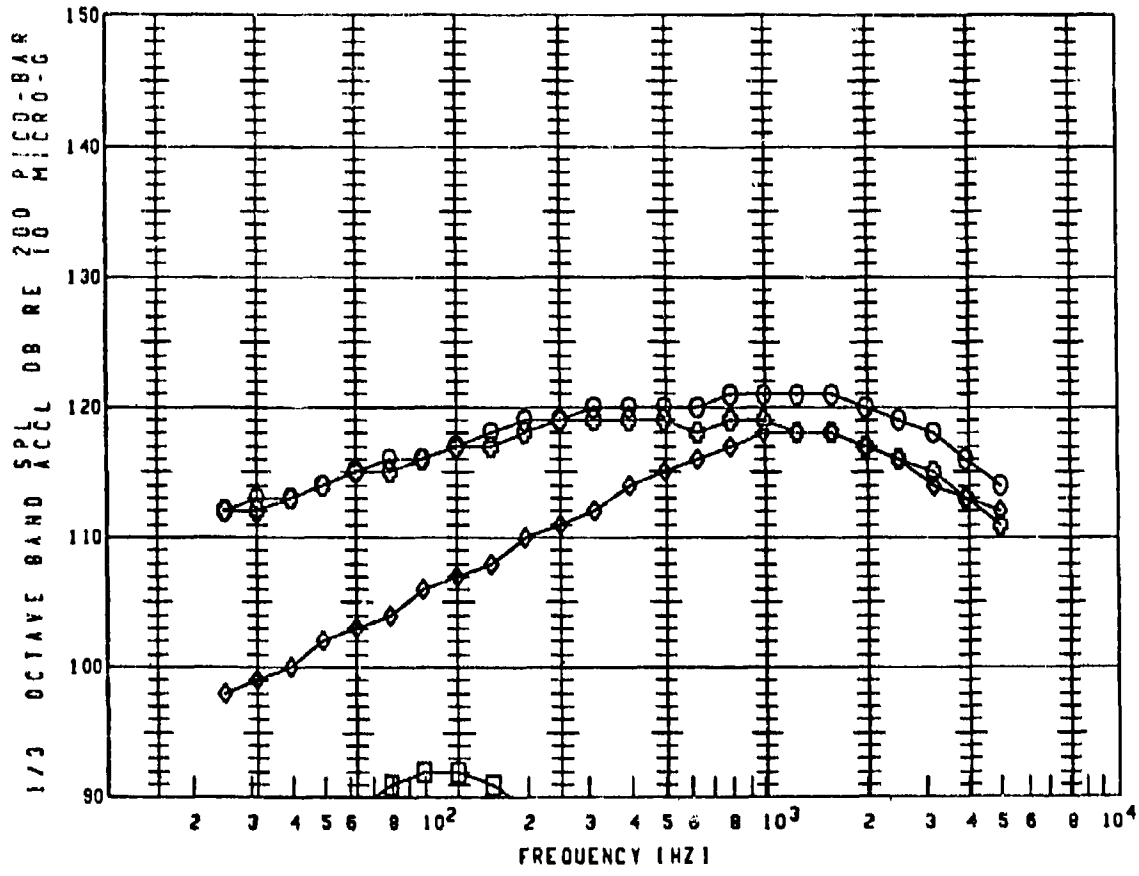
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	V01	BKRL						136
▽	V01	BKRL						0
⊡	V01	BKRL						100
◇	V01	BKRL						135
⊙	V01	BKRL						125

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE,BRAKE RELEASE-OUTBOARD ENGINE



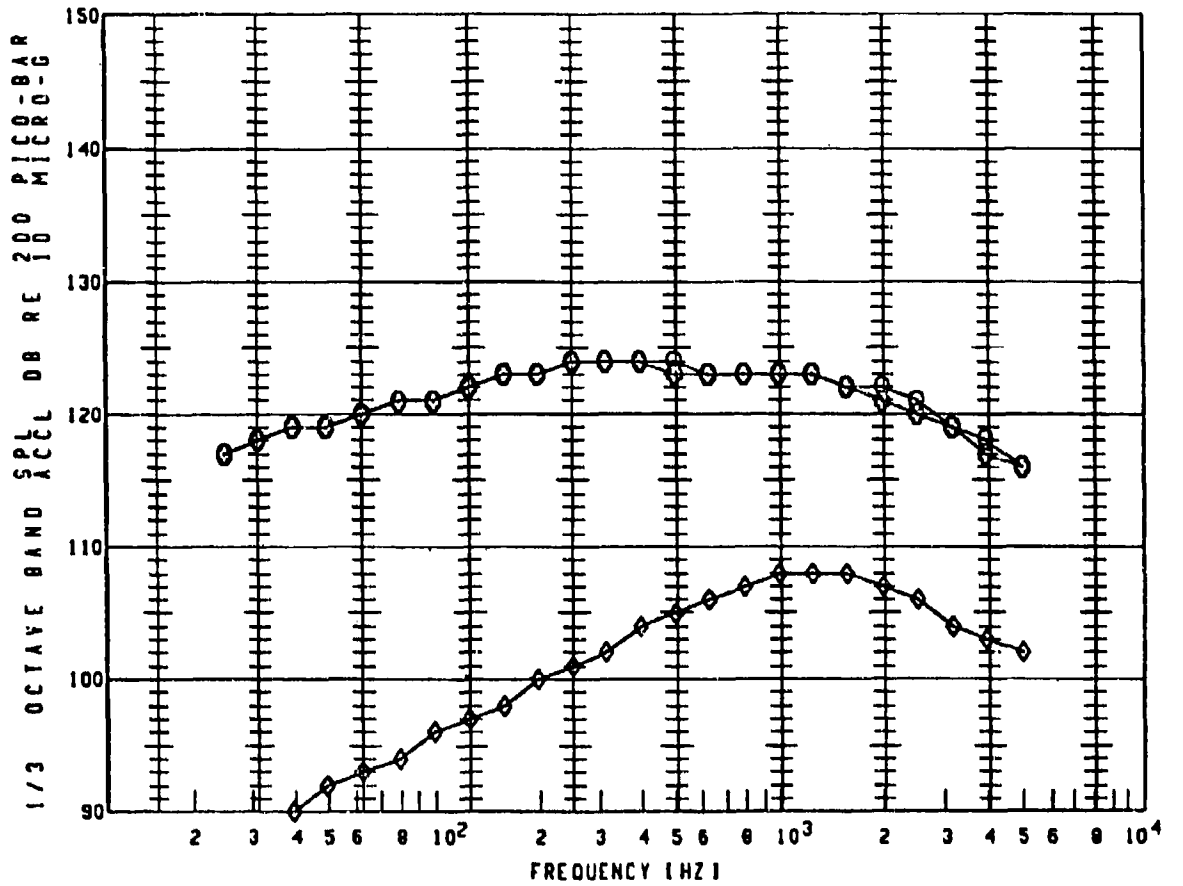
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	NI [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	V02	BKRL						132
▽	V02	BKRL						0
⊡	V02	BKRL						100
◇	V02	BKRL						127
⊙	V02	BKRL						131

NOTES

⊙	PREDICTED TOTAL NOISE,CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZELA 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



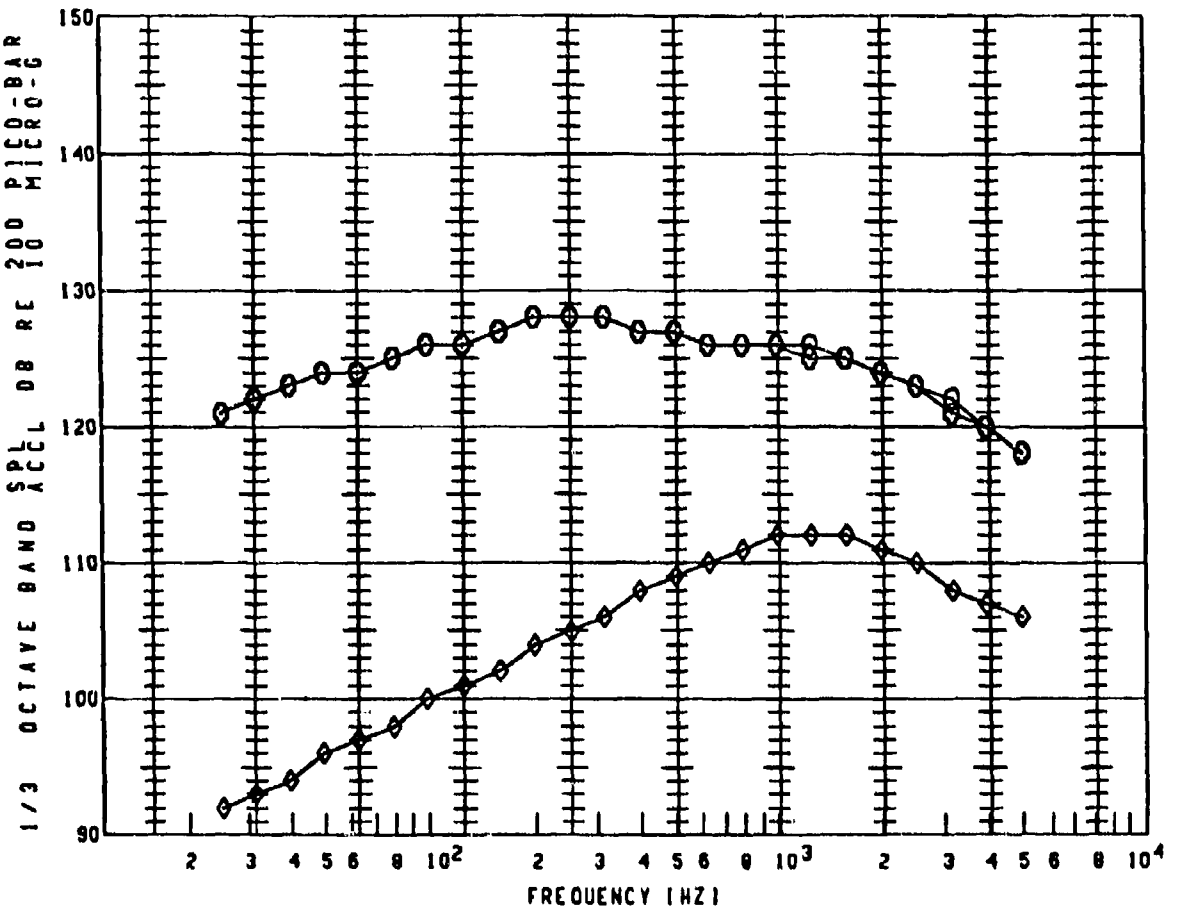
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	N1 (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	F04	BKRL						136
▽	F04	BKRL						0
⊡	F04	BKRL						0
◇	F04	BKRL						117
⊙	F04	BKRL						135

NOTES

⊙	PREDICTED TOTAL NOISE CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



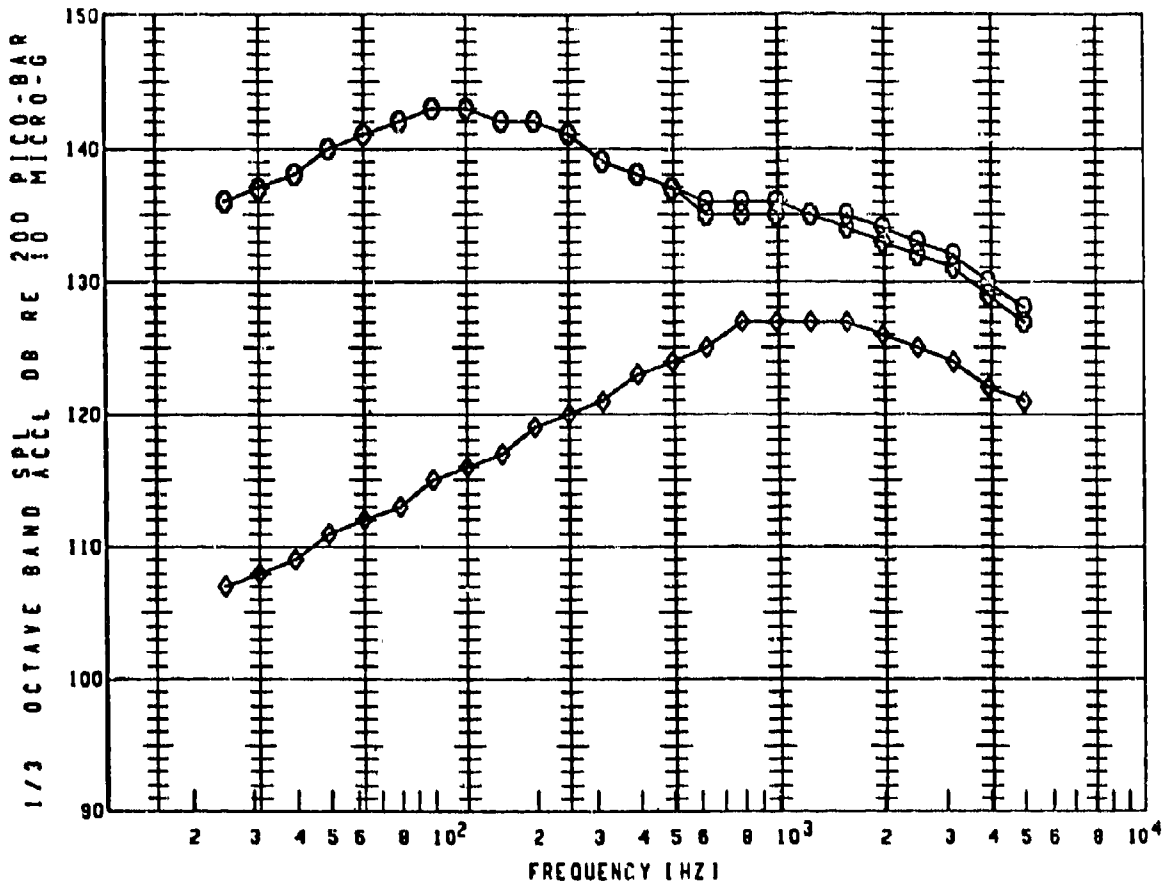
PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. (FT)	SPEED (FPS)	NI (RPM)	VMIX (FPS)	USBFA (DEG)	OVERALL (DB)
⊙	FOS	BKRL						139
▽	FOS	BKRL						0
⊡	FOS	BKRL						82
◇	FOS	BKRL						121
⊙	FOS	BKRL						139

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTZEL/ 03/22/79

PREDICTION FOR OSRA TYPE AIRPLANE.BRAKE RELEASE-OUTBOARD ENGINE



PLOT SYMBOL	X-DUCER NO.	COND. NO.	ALT. [FT]	SPEED [FPS]	NI [RPM]	VMIX [FPS]	USBFA [DEG]	OVERALL [DB]
⊙	F06	BKRL						153
▽	F06	BKRL						99
⊡	F06	BKRL						92
◇	F06	BKRL						137
⊙	F06	BKRL						153

NOTES

⊙	PREDICTED TOTAL NOISE.CREATED	79/03/22.
▽	PREDICTED SEP NOISE	79/03/22.
⊡	PREDICTED EDGE NOISE	79/03/22.
◇	PREDICTED NN NOISE	79/03/22.
⊙	PREDICTED MIXING NOISE	79/03/22.

L BUTKEL/ 03/22/79

*U.S.Government Printing Office: 1980 — 657-084/781